A CHILTON PUBLICATION

# the Iron Age

NATIONAL METALWORKING WEEKLY

September 24, 1953

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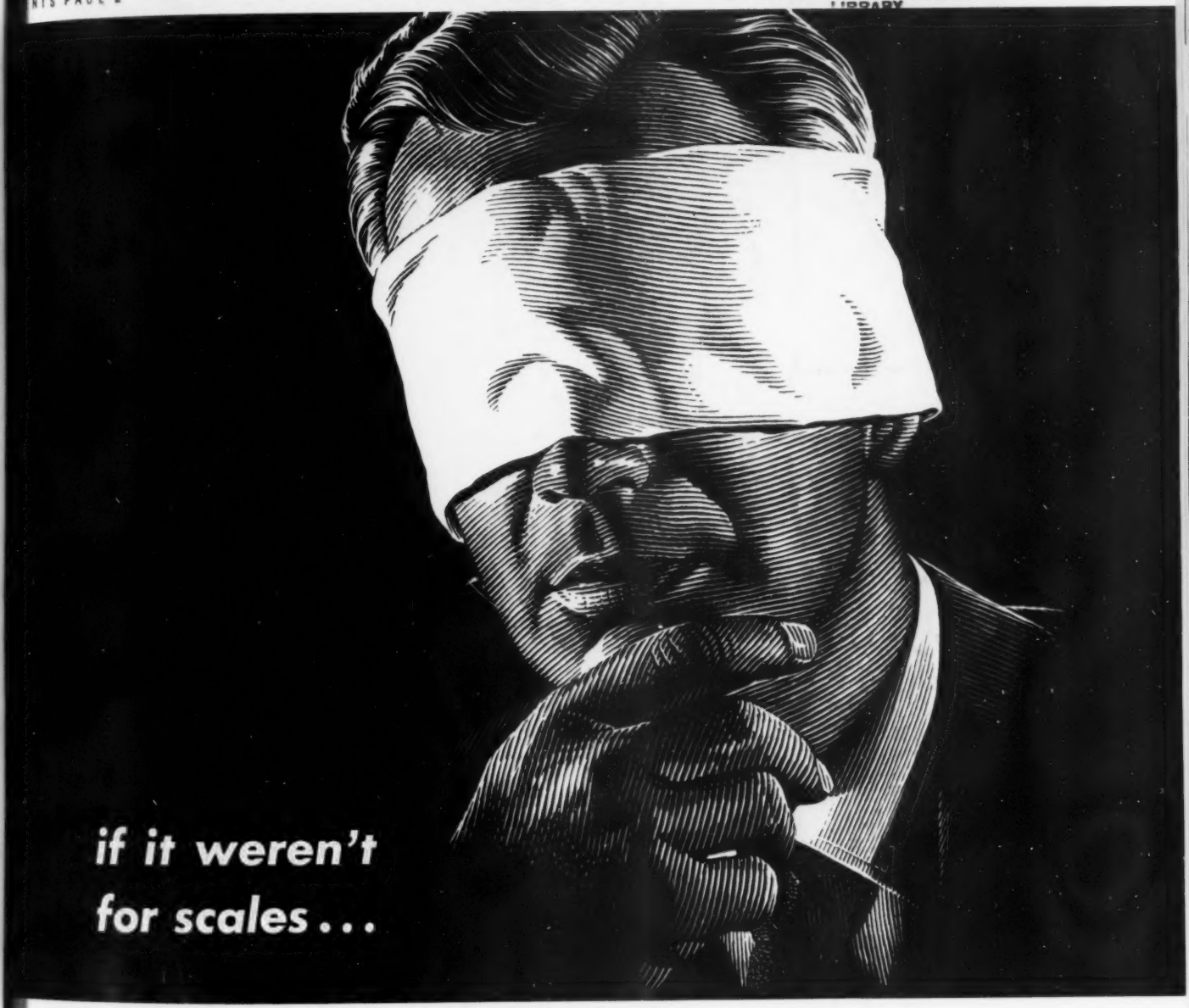


Think of the confusion!
Commerce would be baffling . . . like working blindfolded.
How to barter the world's goods? How to establish the proper ratio for product ingredients? How to facilitate shipping?
It's important to choose scales carefully. Fairbanks-Morse is the oldest and most respected name in scales—choose *your* scale from the broad Fairbanks-Morse line.
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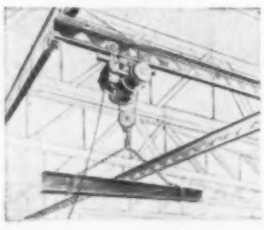
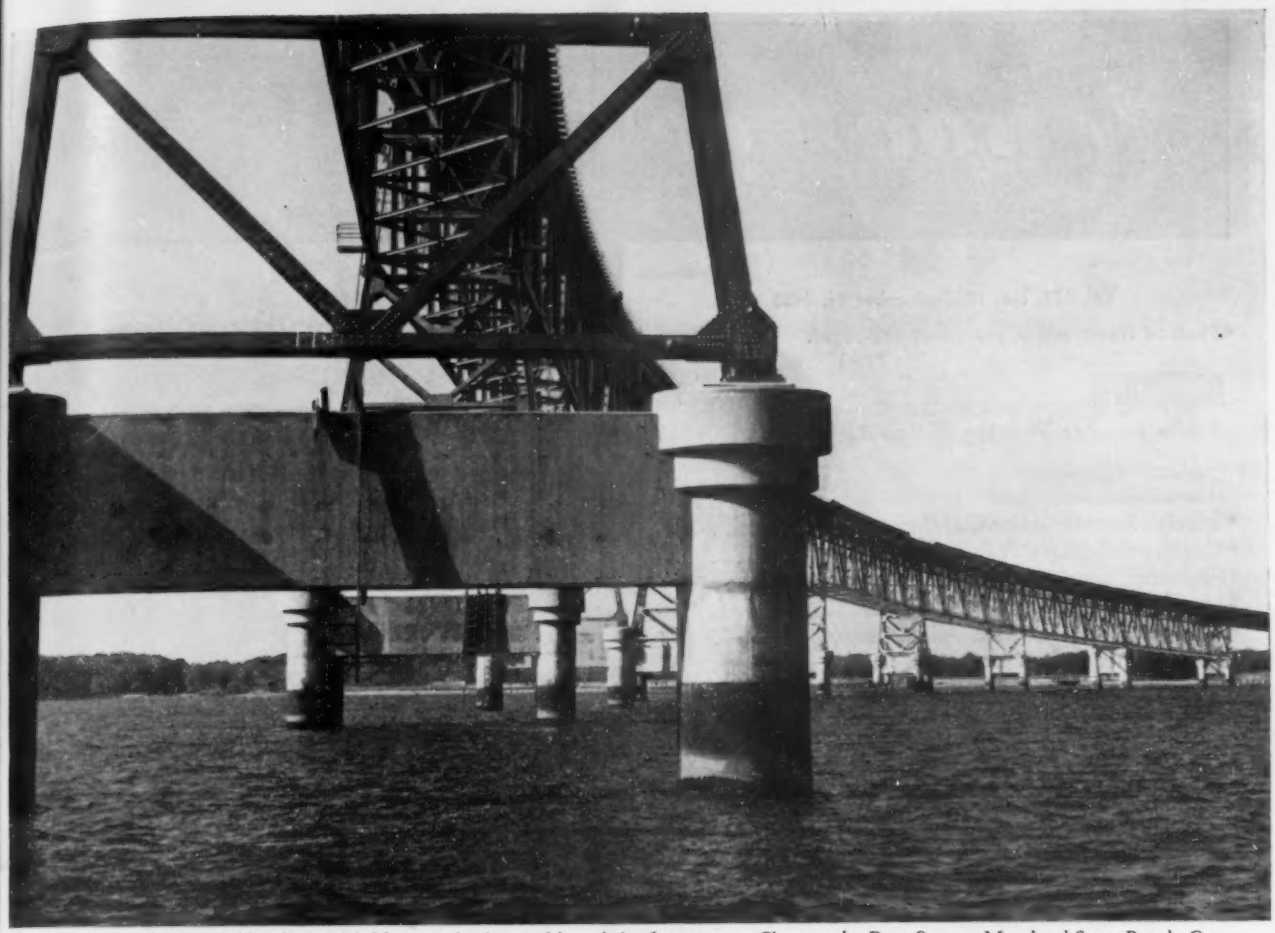


Whiting Electric Chain Hoists

The Whiting Trackmobile

Whiting Corporation also manufactures Aviation, Foundry and Railroad Equipment; Swenson Equipment for the Chemical Process Industries, and Metal-Working Machinery



The Chesapeake Bay Bridge is the third longest in the world, and the first to span Chesapeake Bay. *Owner:* Maryland State Roads Commission. *Designers and Supervising Engineers:* J. E. Greiner Company. *Fabricators and Erectors of Superstructure:* Bethlehem Steel Company.

# Bridge Piers Protected by Mayari R Cylinders

Fifty-seven of the concrete piers that carry the Chesapeake Bay Bridge are protected by Mayari R steel.

The circular concrete shafts of these piers are encased in cylinders of Mayari R plate, extending from a point 5 ft above the mean water line to a point 5 ft below on some, and 2 ft below on others depending upon the location. Mayari R plate is also used to enclose the concrete web members that connect some of these shafts at the water line. These plate sections were fabricated and welded on shore, then lowered into position, where they served as forms for pouring tremie concrete.

These steel sections protect the concrete from any damage that might be caused by floating objects, or by the action of salt water. Mayari R was selected because of its excellent resistance to corrosion and abrasion.

Tests made in industrial atmosphere as well as in brine solutions show that Mayari R has better corrosion-resistance than iron, carbon steel, or copper-bearing steel. For more information on the corrosion-resistance and mechanical properties of low-alloy, high-strength Mayari R get in touch with any Bethlehem Sales office.

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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

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**Mayari R** *makes it lighter... stronger... longer lasting*

The Iron Age

Vol. 172, No. 13, September 24, 1953

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, $15, other Foreign Countries, $25 per year. Single copies, 35¢. Annual Review and Metal Industry Facts Issue, $2.00. Cables: "Ironage." N. Y.

**Address mail to 100 E. 42 St., N. Y. 17, N. Y.**

# DIGEST of the

## NEWS DEVELOPMENTS

**CONTINUOUS STEEL CASTING GAINS TOE-HOLD—P. 55**
Future changes in the steelmaking climate are threatened by the introduction of a continuous steel billet caster this fall by Atlas Steels, Ltd. Similar machines are now in use around the U. S. but the Atlas installation will be the first commercial production model. Eliminates ingot casting, stripping equipment.

**HARVEY EXTRUDES ALLOY STEEL SHAPES — P. 59**
A 5 in. long alloy steel structural part now costs Lockheed Aircraft $8.90 as compared to the old price of $29.40. The saving results entirely from elimination of machining by extruding the part in a converted aluminum press. Harvey Machine Co. is doing the job. Die design is a major point in the hot operation.

**NEW HOOVER GROUP SHARPENS PAYROLL AX — P. 63**
Next week will see the formation of a new 12-man Hoover Commission to take up where the old one left off. Main jobs will be trimming federal fat, chopping dead-wood off payrolls, and attempting to save money. But payroll savings can be offset by other costs. The military plans more cuts, and overseas staffs are eyed.

**U. S. DOLLARS CHANGE GLOBAL LANDSCAPE — P. 66**
Overseas investment by private U. S. industry is literally changing the face of the world as new industrial plants appear. American businessmen have upped their foreign holdings $6.5 billion in 6 years, most in direct investments. Oil has taken $3 billion, iron ore $88 million. Autos, chemicals, metals also grow.

**LUXURY CAR MAKERS BANKING ON PROFITS — P. 74**
Top sales year for high-priced models is forecast for 1954, despite a decline generally expected for automotive sales. According to Detroit executives, the public's demand is increasing for quality cars and expensive appliances. Any backlogs that carry over into 1954 are likely to be in top brackets.

**IKE TO BIDE TIME ON REPLACING DURKIN — P. 79**
Barring a last minute change in his Taft-Hartley strategy, President Eisenhower now intends to take his time about naming a new Secretary of Labor. The President was sincerely sorry to see Mr. Durkin quit—but their differences were pretty well irreconcilable. Possible candidates named.

# the Week in Metalworking

## ENGINEERING & PRODUCTION

**BETTER TUMBLING CAN CUT FINISHING COST—P. 117**
Improved tumbling methods have reduced burring and bench finishing costs. Success is due largely to integration with other manufacturing operations. An exacting combination of granite chips, abrasives and compounds are used for each job. Close timing and cleanliness account for additional savings.

**LOW COST UNIT RECLAIMS FOUNDRY SAND—P. 122**
To eliminate high cost of foundry sand hauled into Utah from out of state, this Salt Lake City foundry decided to build its own sand reclamation system. The unit, built into an area 14 x 14 ft, stands 2½ stories high. Substantial savings have resulted from use of the reclamation unit.

**METAL FINISHING LAB HAS FLEXIBILITY — P. 124**
New research facilities recently completed by Wyandotte Chemicals Corp. permit full-scale study of metal finishing operations. Flexibility of construction materials enable a wide variety of plant conditions to be duplicated. Spray washing equipment is unusual.

**OXYGEN-STEELMAKING GIVES GOOD PRODUCT—P. 127**
Refining steel in the converter by blowing high-purity oxygen on the surface of the hot metal is a new approach to making high carbon steel. A low nitrogen steel comparable with openhearth steel is produced. Rolled products made from oxygen-steel ingots are remarkably clean and ductile.

**ONE SETUP HEAT TREATS VARIETY OF WORK—P. 131**
Less space, better location, lower costs and higher product quality have resulted from a carefully planned heat-treating installation. Nuts and fasteners varying widely in size, shape and material can be handled continuously. Work is heated, quenched, degreased, rinsed and tempered in a single-line operation.

**NEXT WEEK—INFRARED HEATING ECONOMICAL, CLEAN**
Modern continuous process heating operations using infrared sources are economical, clean. Better control of the operation and elimination of overbakes resulting from conveyor system stoppage is possible. Infrared heating is clean, fast and can be applied to a wide variety of process heating operations.

## MARKETS & PRICES

**DECLINE TO FOLLOW CONSTRUCTION BOOM — P. 56**
Though backlogs were solid and business brisk this month, there were indications that new structural fabricating business would begin to lag as early as third quarter. One large firm reported inquiries had fallen as much as 35 pct since July. Work on hand will keep fabricators busy into first quarter.

**STEELMAKERS WILL MAKE GOOD MONEY IN '54—P. 57**
"Steel plants were never intended nor designed to operate regularly at 100 pct of capacity." This reminder came from Benjamin F. Fairless, chairman of U. S. Steel Corp., as the industry's ingot rate continued to slide. This is no news to steelmen but calamity howlers have been predicting dire things.

**BRASS MILL BUSINESS WILL DIP, NOT DIVE — P. 58**
Selling a wide variety of products throughout industry, brass mills expect their operations to follow the general trend of industry as a whole. A slight dip is expected—but there's no sign of any substantial recession. First half was well over 1952 and August shipments rebounded from July vacations.

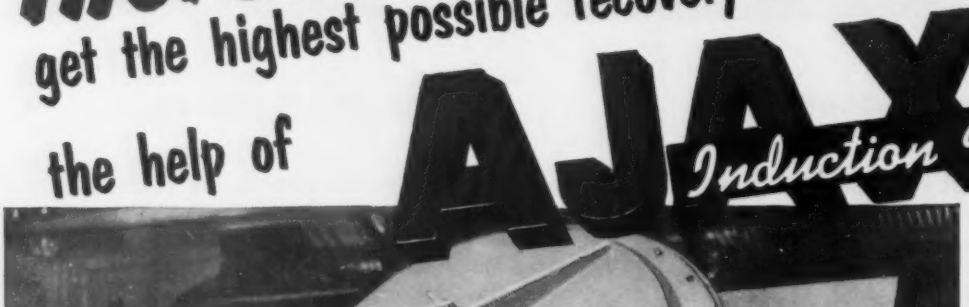
**CURTAIN IS RISING ON ADJUSTMENT PERIOD—P. 87**
The curtain is going up on the Great Transition—a much-heralded economic drama about industry's adjustment to less boom, a still vital prosperity. In 1954 this should cause no dislocation. High spending, investment will boot '53 to a fast finish. Factors that signal economy turning point are listed.

**STEEL PEOPLE FEAR INDUSTRY'S UNDERRATED—P. 141**
While the steel shortage seemed acute 6 months ago steel leaders were predicting a moderate decline in the fourth quarter. Now it's pretty clear they were right. Steel officials now fear their industry is being underrated. They are reassuring investors and customers that business will still be good.

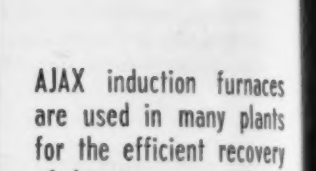
**COPPER DELIVERIES NOSEDIVE AGAIN — P. 144**
The domestic copper market continues on the quiet side with fair quantities of metal changing hands. August copper statistics show increase in refined stocks of 42,790 tons held by producers outside the U.S. This is more than the growing Chilean surplus can account for. Shipments drop 22,000 tons.

# Increase Your Profits—

## get the highest possible recovery of aluminum scrap with the help of AJAX TAMA-WYATT Induction Furnaces—




AJAX induction furnaces are used in many plants for the efficient recovery of loose scrap, such as foil, chips, borings, turnings and the like. They are also adaptable for the full range of non-ferrous metals and alloys with the same advantages obtained in aluminum, and are built in sizes ranging from 20 kw to 1400 kw.



AJAX low frequency induction furnaces will melt aluminum foil scrap with the lowest obtainable melting losses. Photo above shows an AJAX 166 kw melting furnace installed at the plant of the TOYO Aluminum Works in Yao, near Osaka, Japan. Unbaled foil scrap shown at right edge of photo is remelted at the rate of about 900 pounds per hour with a recovery of over 99%. Molten metal is poured into ingot molds as shown in the front of the photo. Another view of same furnace is shown in small photo at right.

**Send for Reprint of Article on Scrap Recovery by Induction Furnaces**

**AJAX ENGINEERING CORP., TRENTON 7, N. J.**

AJAX TAMA-WYATT

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One of the Publications Owned and Published by Chilton Co., Inc., Chestnut & 56th Sts., Philadelphia 39, Pa.

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# While You Are Waiting (If You Are)

FOR years many business people have been looking for a depression or recession. In 1949 they looked so hard that they really caused a short one—even though there was no real basis for it. Experts too have followed the same path. They have told us almost to the day and hour. Only it never came.

Now the big pitch is that we will have a depression or recession in 1954. The chances are that those who think that way will be just as wrong as they have been in the past. No one expects business to keep going up in 1954 but quite a few astute and practical fellows look for a "good" year in 1954.

Here are a few things to think about while you wait for things to go to pot:

¶ In a little over 6 years television set ownership went from practically nothing to 25 million plus. In a few years color television will capture the people's fancy. And in 2 years home air conditioning ownership will look like television did a few years ago.

¶ Your government will spend $43 billion this fiscal year on defense and will get more for your money. In the fiscal year starting next June another $43 billion will be spent—unless the appeasers win out, which they won't.

¶ By 1960—and for the 10 years following—about 1,600,000 boys and 1,600,000 girls will reach 20 years of age. They—or most of them—will marry, have children, build homes and expect a high standard of living.

¶ By 1970—based on an expected birth rate of 3.8 million per year—close to 2 million boys and 2 million girls will reach 20 years of age each year for the following 10 years. They too will exchange their work for your products.

¶ At present we are still 5 million homes short. Home building has slowed up—but only temporarily. But school building, all grades, is way behind. The same holds for road building. Neither can be put off any longer.

¶ Farming—there won't always be surpluses—is on the verge of revolutionary methods.

If you take the time you can think up a lot more reasons why there is still room for cheer, pep, enthusiasm and imagination. The time isn't ripe for a depression unless most businessmen are.

Tom Campbell

*Editor*

# Cost of Handling Steel Bars Cut in Half *with* BAKER TRUCK

**JONES & LAUGHLIN DETROIT WAREHOUSE USES CRANE TRUCKS AND PORTABLE RACKS FOR MORE EFFICIENT HANDLING AND STORAGE**

★ Specially designed portable sectional racks for storing steel bar and rod stock plus the use of a BAKER Crane Truck have cut handling costs by one-half at the Jones & Laughlin Steel Corporation's Detroit Warehouse. This stock was formerly stored by hand in upright position, requiring laborious manual handling. Even with overhead cranes, considerable hand labor was necessary. Previous to the purchase of the truck and the installation of the portable racks, Jones & Laughlin used 6, 8, or more men to pile steel and fill orders. The entire operation is now handled by three men.

With the Baker Crane Truck and sectional storage racks, costs have been halved—and the crane truck still has time to handle steel packs—a further saving not anticipated when it was purchased.

Illustration shows the BAKER Crane Truck handling steel bars stored on sectional racks set at 45° angles in 15 x 15 foot bays.

*Documented Case History of Baker Truck savings for Jones and Laughlin is available. Use coupon below.*

**The Baker-Raulang Company**
1227 West 80th Street, Cleveland 2, Ohio

Please send me case study report No. 3051 showing savings with Baker Truck at Jones & Laughlin.

Name ..... Title .....

Company .....

City ..... State .....

**Baker**
**INDUSTRIAL TRUCKS**

# Dear Editor:

*Letters from readers*

### Sales Forecast

Sir:

We are presently working on our 1954 and 1955 Sales Forecasts and we need some area-wide statistics to help us come up with a more objective answer.

THE IRON AGE Summary page presents a chart on steel operating rates. We believe we can tie this weekly chart in with our quarterly forecasts; however, we need these same figures back through 1947 for comparative purposes. Can you supply us with this information? Likewise, is it possible to supply us with the ingot ton capacity in these areas for the same period?

*R. B. WHITE*
*Chief Analyst*

*Market Research Dept.*
*Standard Pressed Steel Co.*
*Jenkintown, Pa.*

### Small Mill

Sir:

We would appreciate it if you could supply us with the full address of the Stanat Mfg. Co. We are interested in obtaining more information about their small mill which is mentioned in Technical Briefs, p. 148 of the June 25th issue.

*G. G. WAITE*
*Chief Engineer*

*Sangamo Co., Ltd.*
*Leaside, Toronto, Canada*

The address of the Stanat Mfg. Co. is 47-28 37th St., Long Island City, N. Y.—Ed.

### Pig Iron Production

Sir:

In your January 11, 1951 issue, p. 71, you have an article "Germans Make Pig Iron Without Coking Coal" by B. M. Pearson, Saxonhurst, England.

Could you tell me where I can find more recent information on this subject?

*E. GARZA SADA*
*Monterrey, N. L., Mexico*

A more recent article on this subject appeared in the May 21, 1953 issue of The Iron Age.—Ed.

### Arcair Process

Sir:

In your issue of February 14, 1952, an article entitled "Compressed Air, Carbon Arc Speed Metal Cutting" appeared, and we would appreciate it if you will be good enough to tell us the name of the company who has sponsored this process, as we would like to have more details on it.

*R. E. CLIPSHAM*
*Managing Director*

*Lincoln Electric Co., Ltd.*
*Herts, England*

Details of the Arcair Process may be obtained from the author of the article, Mr. Hubert Chappie, Foundry Supt., The National Supply Co., Torrance, Calif.—Ed.

### Enameling Iron

Sir:

Could you please advise the present availability of enameling iron for sink manufacture?

We would like a list of the available sources and the approximate tonnage produced by these various mills.

*H. E. LA DOW*
*Director of Purchases*

*Active Tool & Mfg. Co.*
*Detroit, Mich.*

Market reports indicate that enameling sheets are beginning to ease and you should be able to meet your fourth quarter requirements from regular mill sources.—Ed.

### Tear Sheets

Sir:

Referring to the July 9th issue of THE IRON AGE, will you please send us four tear sheets of each of the following articles?

"Titanium: New Process Leaves Lab," p. 73 and "How Colloidal Graphite Protects Bearing Surfaces," p. 135.

*DREW McKENNA*

*The Cleveland Graphite Bronze Co.*
*New York, N. Y.*

### Soldering Improvement

Sir:

We would appreciate 12 tear sheets of the article "Improve Your Soldering With Noncorrosive Flux," p. 115 of the September 3rd issue.

*E. A. TROUTMAN*
*Supervisor*
*Wage Rate & Planning*

*General Electric Co.*
*Cleveland, Ohio*

### Diamonds

Sir:

Our engineers require the article "Diamonds: New Wheel Looks Good" from the September 3rd issue, p. 37. If tear sheets are available, we would appreciate it very much if we might have a copy.

*L. C. STRONG*
*Librarian*

*International Harvester Co.*
*Chicago, Ill.*

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## For Heat-Treating Small Parts...

# ihp*

## SELECTIVELY HARDENS

Patterning the hardness of small parts is one function of ihp* furnaces. Here a furnace 29″ long, 22″ wide and 13″ high through-hardens 2300 typewriter key bars per hour. The final step in another Selas furnace is a tempering operation which produces different Rc values at desired points on the bar.

The *Improved Heat Processing* technique also produces a straightness exceeding that achieved by former heat treating methods.

For metal working, as in metal producing, ihp* improves quality and accelerates production, with attendant savings in labor, space and fuel. Write today for Selas recommendations on heat processing your product.

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**as proved in the metal industry for**

| | |
|---|---|
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# SELAS

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**PHILADELPHIA 34, PENNSYLVANIA**

*Heat Processing Engineers for Industry • Development • Design • Manufacture*

# Fatigue Cracks

*by William M. Coffey*

### Speak for Yourself, John

He'd just about reached his limit. Perched way up the mast of the *Bon Homme Richard* in her famous fight with the big British frigate *Serapis*, this tough marine had been buffeted about for over 3 hours. Yards, blocks and rigging were crashing all around him. He'd barely escaped death a hundred times. At any moment he knew the mast he was on would go over the side. He'd had it. He was ready to quit.

When what does he hear from the deck below, thundering out above the din and noise of battle, but the voice of John Paul Jones yelling to the British captain, "We've just begun to fight." That did it. The big marine spots Jones below and drops his rifle square for his head, muttering bitterly to himself that *"there's always one son of a gun in every outfit that never gets the word."*

The above is the only joke we've ever printed here that we aren't apologizing for. Guess you need some kind of military background to understand it, but we rather like it.

### Jim's Boat

It must be a great thing to be a boat owner. Take Jim Crites, promotion manager for your ffj. Jim's a boat owner. Jim's not only a boat owner, but a fanatical type boat owner. Jim has a beautiful wife Jeanne, and a new house, but he'd trade both for a new mainsail for this boat of his. Every spare minute at any time day or night, in winter, summer, fall and spring—in rain, fog, sleet and gale Jim can be found scraping, painting, caulking his boat.

It's kind of an old boat and not in Vanderbilt's class, but it's Jim's passion. Jim's trouble, though, is that he never sails this boat. He just works on it. Just once did he get this boat in the water for a cruise. That was last week. It was going to be a big cruise. Jim had been dreaming about this cruise for a year while he was working on this boat. Everything was pointed for the big day. He was devoting his whole vacation to cruising on this boat.

The day came. Everything was set. Food, ice, charts and all his own and Jeanne's gear had been meticulously stowed aboard. He even had a copy of the *Yatchsman's Guide to New England Harbors*, quite a few of which Jim planned to see. The day he steered her out the channel was the happiest in Jim's life. It was worth all the toil and trouble and money that Jeanne couldn't use for permanents. This was it. Perfect weather and 10 days of glorious cruising ahead.

Jim and his boat were back the next day, high and dry in the boatyard. It seems the boat wasn't fixed quite right. She leaked. And she leaked and she leaked. Jim and Jeanne were up all night pumping her out and just barely succeeded in reaching the boatyard before sinking to the bottom. That was Jim's big cruise.

What's Jim doing this weekend? Working on his boat. Jeanne isn't talking to anybody.

### Inside The Iron Age (VII)

The trials and tribulations of a circulation manager can best be understood by reading the following letter from the wife of a good subscriber:

**Gentlemen:**

**Enclosed please find the September 3rd issue of your magazine of which my husband is a subscriber. The enclosed copy was forwarded in such a condition as to scratch the surface of my new mahogany table. As you will note the wrapper was not removed and the protruding staple, which caused the damage, is clearly visible on the front left corner of the magazine. The table in its present condition is just ruined but I have checked into the matter and find that the damaged area can be repaired or refinished. I believe that this fault is the concern of the binding company but am forwarding this information to you with the anticipation that some adjustment can be arranged to rectify this unfortunate happening.**

**Mrs. _____**

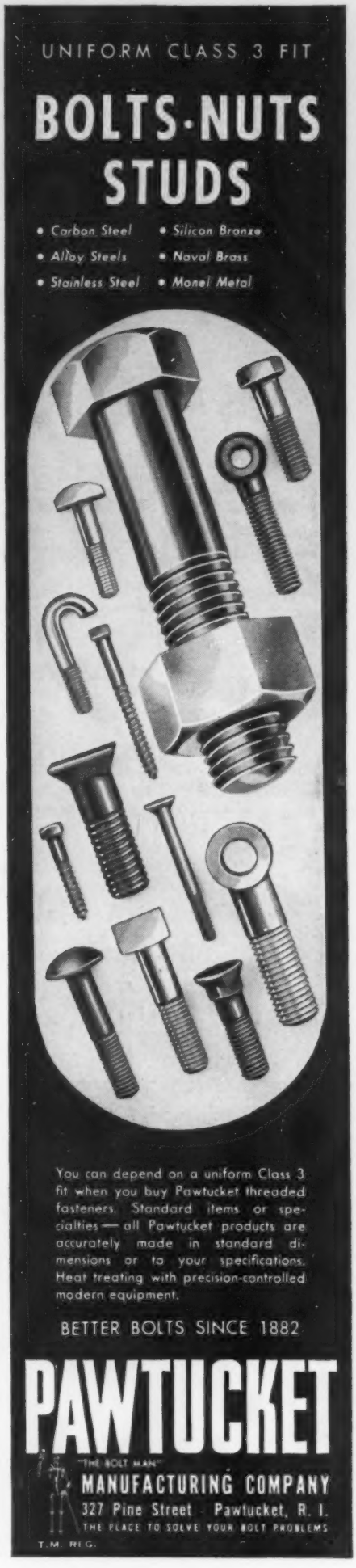
He *was* a good subscriber.

### Puzzlers

The amoeba puzzler fooled no one. *The answer:* It takes 39 minutes for the gold fish bowl to become, half full with amoebaes. *The winners:* Lou Wolff, J. J. Brugman, Helen Hovey, Henry Davis, Edward Weiler, Stanley Bey, H. R. Boyer, J. S. Prifogle, Marina Voutsis, W. J. Kutter, R. J. Hartmen (and thanks for your nice letter), H. A. Krampert, Tommy Anderson, J. K. Thompson, Raymond Robinson, O. R. Garrett, don Jacobson and Mr. Rice.

### New Puzzler

On a certain invoice for some goods, a total discount of 38.8 pct was given. This was the result of a series of three discounts, the first 20 pct, the second 10 pct. What was the third discount? Many, many thanks to Mr. Rice.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# HOW WHEELABRATOR® STEEL SHOT Strikes at the HEART of Your Cleaning Cost Reduction Problem

## LESS ABRASIVE CONSUMPTION

General Heat Treating Co., Syracuse, N. Y., is able to clean 217 lbs. of heat treat work for every pound of Wheelabrator Steel Shot consumed, compared to only 34 lb. of work cleaned per lb. of malleableized grit formerly used.

## INCREASED PARTS LIFE

At a progressive Eastern Steel Foundry the use of Wheelabrator Steel Shot resulted in a 150% increase in blade life with corresponding increase in the usable life of other machine parts.

## LOWER CLEANING COSTS

A large New York grey iron foundry slashed abrasive costs for $2.49 per hour to $1.54—a 38% reduction . . . when they switched from chilled iron grit to Wheelabrator Steel Shot.

## LESS MAINTENANCE LABOR

Due to the 300% increase in machine parts life resulting from the use of Wheelabrator Steel Shot, maintenance labor costs were slashed at a prominent Eastern Plant.

Another American FIRST

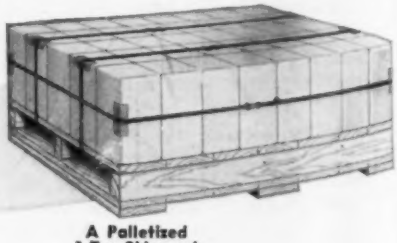
## 50 LB. CARTONS and PALLETIZING

**For Safety—Convenience—and Lower Cost to You**

Wheelabrator Steel Shot is now packaged in strong, easy to handle 50 lb. cartons—more rugged and durable than antiquated burlap bags (100 lbs.). Shipments of 1 ton or more are securely strapped to expendable pallets (40 cartons to a pallet) for safer transportation and easier handling and storage. *All at no extra cost!* Another "plus" for Wheelabrator Steel Shot—the modern blasting abrasive.

Easy-to-carry, easy-to-pour, this new carton reduces strain and fatigue in abrasive handling.

50 lb. carton



A Palletized 1-Ton Shipment

WRITE FOR BULLETIN No. 89

American

**WHEELABRATOR & EQUIPMENT CORP.**
**510 S. Byrkit St., Mishawaka, Indiana**

The Iron Age
FOUNDED 1855

# THE IRON AGE Newsfront

A LOW-TEMPERATURE ARC BRAZING method now under test has been used successfully on sheet down to 0.020 in. thick. The method, being developed under wraps by a leading welding equipment manufacturer, requires further work to bring costs down.

GROUP INSURANCE FOR AS FEW AS TEN PEOPLE will enable small firms to offer employee benefits comparable to those long offered by large companies. The new type low-cost policy offers combinations of pensions, death benefits, widow income, disability pay, and hospital and surgical benefits for employee and family.

MORE INTER-SERVICE COOPERATION ON GUIDED MISSILES is being pushed. A committee named by Defense Secretary Wilson is examining projects, inspecting production, studying ways to save money and abolish duplication in Army, Navy and Air Force missile programs.

COLOR TELEVISION SET PRODUCTION for 1954 is estimated at 50,000 to 75,000 units. A dozen manufacturers have built sets on a trial basis but entry of many firms in the field is doubted. Emerson, GE, and RCA, plan to build color sets on a commercial scale. But "color for the millions" is believed three or four years away.

UNTIL NECESSARY PROJECTION EQUIPMENT is more widely available, industry will be slow to adopt 3-D movie technique. Under present conditions, 3-D industrial movies must be shown on the road by the producer, limiting audience and increasing costs. Production costs are also higher.

DON'T BE SURPRISED IF STEELMAKING operations bounce back a few points within the next month. Midst reports of a declining ingot rate (lowest in 13 months) some people have lost sight of one important fact. Over the years, steel production peaks have usually occurred in March and October.

ON THE QUESTION OF NICKEL DECONTROL, Office of Defense Mobilization is playing it cagey. Says it wants all the facts before deciding what, if anything, to do about it. Result: It's doubtful there'll be any action before 1954.

FARM EQUIPMENT MARKET INDICATIONS aren't too bright for 1954. Most generally used types now in the consumers' hands have a useable life expectancy that extends at least into 1955, possibly longer. At the same time, foreign builders are expected to make a strong bid for the American consumer's dollar next year.

BUSINESS FOR STEEL FABRICATORS looks solid into the first quarter of 1954 despite reportedly falling backlogs. One group reports tonnages of steel in backlogged construction at an all time high as of the end of July. At least 7 months' work is represented by the tonnage figure quoted.

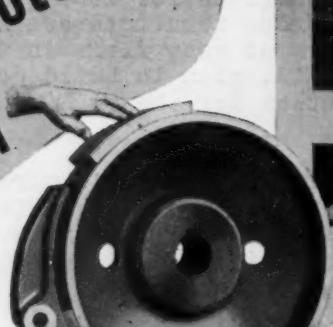
NO DRASTIC REDUCTION in total foundry labor force is expected by foundrymen despite the increasing trend toward automation. They feel added emphasis on product variety and quality control should keep employment rolls intact.



NEWSFRONT NEWSFRONT NEWSFRONT

Type WB Brake showing how the motor armature is easily lifted out. At top left is the handle-nut for compressing the spring when removing motor armature, changing brake shoes and for manual control.

# Long Life Brakes for A-C and D-C Motors by EC&M



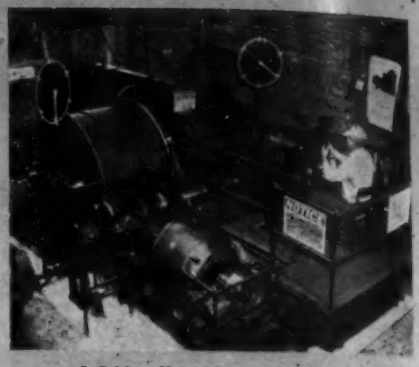
The brake lining is molded to match curvature of wheel and shoe.

Actual wearing thickness, between rivet heads and brake wheel, is 1/8" on the smallest size to 7/16" on the largest size.

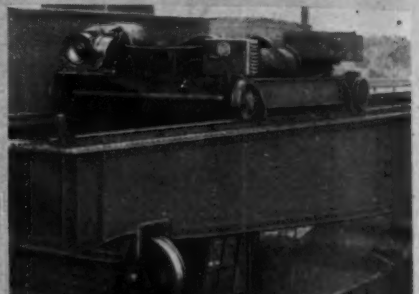
These Type WB Brakes use a block type lining which is both thick and tough.

Furthermore, due to the process of manufacture, the blocks have proper frictional quality *throughout the entire thickness* permitting uniform and complete wear down to rivet heads. And since the material is non-compressionable, brake adjustments are infrequent.

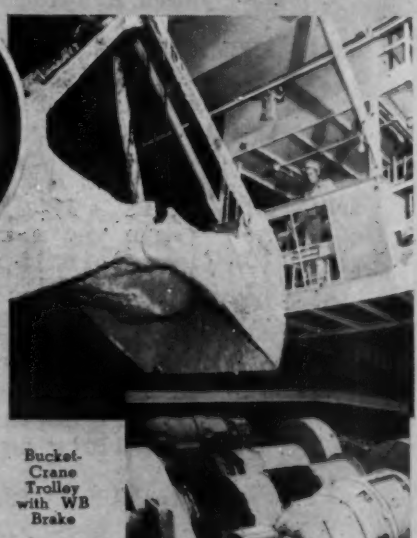
## Where You Will SAVE With WB Brakes



A-C Mine-Hoist Motor with WB Brake



Reduces Delays on Foundry Crane



Bucket-Crane Trolley with WB Brake

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**THE ELECTRIC CONTROLLER & MFG. CO.**

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# STEEL: Continuous Casting Gains Toe-Hold

**Atlas Steels to introduce continuous steel billet caster . . . Threatens change in steelmaking methods . . . Eliminates ingot casting, stripping equipment—By G. G. Carr.**

Continuous casting, an important feature of nonferrous metal industries for some time, until recently has been little more than a small cloud on steel's horizon. Now its shadow is lengthening, threatening future changes in the steelmaking climate.

### Finish Production Model

Major shift in the wind will come this Fall when Atlas Steels Ltd., Welland, Ont., puts the finishing touches on its Rossi-Junghans continuous steel billet caster. Similar machines are now in experimental use around the U. S., but the Atlas installation will be the first commercial production model in North America.

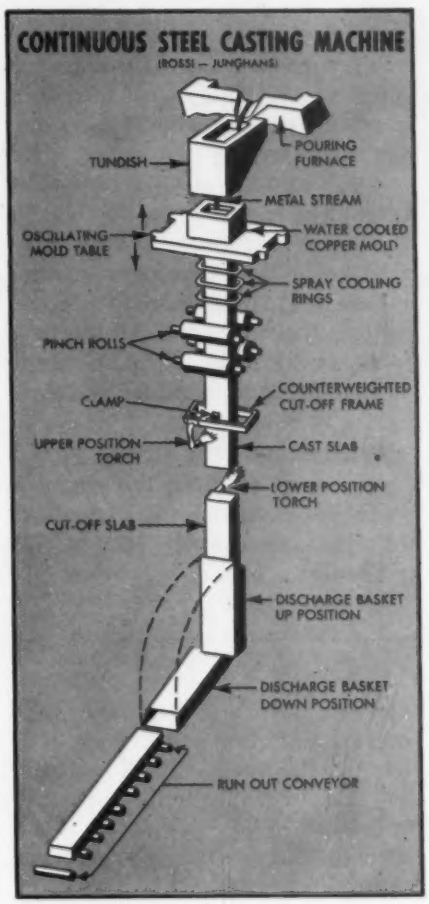
Engineered and built by Freyn Engineering Div. of Koppers Co., the Atlas machine conforms to Rossi-Junghans patent agreements, controlled in the U. S. and Canada by Continuous Metalcast Co., New York. This firm is owned 35 pct by Irving Rossi, 35 pct by Allegheny Ludlum, and 10 pct each by Koppers, American Metals Co. and Scovill Manufacturing Co.

### How It Works

A brief summary of continuous casting operations highlights the development's implications. In the Rossi-Junghans method, as developed for the Atlas installation, molten steel is poured from an insulated ladle into a refractory funnel or tundish. An electric holding furnace can be used in place of the ladle if desired.

From the tundish the still-molten metal flows into a water cooled copper mold. Specific mold sizes planned at Atlas are 4¼ in. x 4¼ in., 5½ in. x 7½ in. and 5½ in. x 21½ in. Larger sections may be cast by fitting multiple nozzles to the tundish.

First metal to enter the mold attaches itself to a dummy bar. When the proper level is reached, the mold oscillates vertically at a fixed speed, as pinch rolls beneath the mold pull the dummy bar and attached metal, now solidifying, from the mold. Additional molten metal is of course entering the mold at the top throughout the process.




The metal at first solidifies rapidly while in intimate contact with the mold, then slows as shrinkage produces an air gap between the mold and the hot steel. Water sprays directly below the mold speed solidification of the emerging billet. Cooling rate for some grades can be modified by using fog nozzles or air blast instead of water.

Reaching the cutoff area, the dummy bar is removed. The billet is then cut into desired lengths by an oxyacetylene-powder torch. Cut billets are then either charged into reheating furnaces for subsequent hot working or are air or slow cooled, depending on the steel.

### What It Saves

Atlas is hoping for production of 150-170 tons of billets per 24-hour day, but admits this is still at best an informed estimate. Uncertain production rates keep operating costs tentative. But certain definite conclusions are justified by the nature of the process.

Continuous casting eliminates the need for all ingot casting and stripping equipment except the ladle crane. Soaking pits and blooming mills are unnecessary, and further refinements of the process may reduce the number of subsequent rolling operations.

In this direction, Armco is testing continuous casting of strip on equipment designed by C. William Hazelett Co., Greenwich, Conn. Goal is 200 tons of 10-gage strip per hour.

### Expect Other Benefits

Atlas estimates that elimination of ingot molds alone will pay casting machine operating costs. Expected improvement in surface quality will also lower conditioning costs.

An important saving will come from a substantial increase in yield.

Conventional steelmaking generates about 25-30 pct scrap. Atlas

# BUILDERS: After the Boom Comes Lag

**Backlogs for structural steel fabricators are weighty . . . Business is spirited . . . But the post-boom lag is shaping up . . . Industry will go strong into '54—By K. W. Bennett.**

Though backlogs were solid and business brisk this month, there were indications that new structural fabricating business would begin to lag as early as third quarter. One large firm reported that inquiries had fallen since July by as much as 35 pct.

On the other hand, no one in the structural fabricating field is wailing at the wall. Backlogs are fat, volume strong. One group of fabricators reported end of July backlogs (tonnagewise) at an all time record, representing a good mixture of commercial, industrial, and government business.

### Keep Hard At Work

The work at hand is sufficient to keep most shops hard at it until the end of fourth quarter and a fair percentage will be tied up well into first quarter of next year.

The demand for structural fabricating capacity has been caused by far more than former tightness in steel supply.

(1) New industries have been a potent factor in pushing industrial and commercial building since the war. Plastics, electronics, chemicals were expanding along with basic steel, forging, etc. New foundry techniques called for plant expansion.

(2) Established industries were diversifying. Farm equipment producers were making appliances, electrical equipment. Appliance producers were producing air conditioning equipment. Construction equipment producers were adding materials handling equipment to their lines.

(3) In the past year and a half a number of heavy industries began to consolidate, bringing more operations under their home roof, with resulting increases in plant space. This trend has been accelerating and should continue for some time.

(4) Though a considerable amount of defense production in the last 2 years was set up in previously built government plants, repair and renovation work, as well as the very considerable new work brought in by AEC, kept government participation by fabricators at a high level.

Fabricators with an eye to the future point out that the postwar wave of expansion has reached its crest, and should begin to fall in the latter half of this year. Diversification, while continuing, has, like expansion, apparently reached its peak as far as new building goes.

Consolidation, although continuing, is past its peak. And government building has been ebbing for some time. Even the gigantic AEC program seems to be falling off.

These factors signal that the 1954 level will probably fall below 1953, the all-time record. Some sources report delivery of fabricated items is speeding up.

### Shipments at Peak

This is not an indicator that business has already begun to slide. It does indicate that the structural shortage, though still tighter than a new celluloid collar, has begun to ease somewhat.

A study of total structural steel shipments shows that steel producers this year have shipped as much structural steel at the end of June as they had at the end of July in 1951 and at the end of June in 1952.

In only 2 months of the first 6 in 1953 did net tons of structurals shipped drop below 400,000 tons. Average monthly tonnage shipped through June was 409,659 as compared with 410,164 for 1951 and 344,854 for 1952.

The outlook for 1953 is good for the structural fabricator. He has plenty of work in process and his volume thus far has been a record. Any slump isn't expected to be felt until at least early 1954.

## Special Report

*Continued*

expects continuous casting to cut this to 2-5 pct.

Overall cash savings from the process are figured at 3¢ per lb for stainless, 8¢ per lb for valve steel, and 20¢ per lb for high speed steel.

Plus benefits are expected from improved internal structure of steel so cast. Rapid chilling, an integral part of the process, cuts segregation, and in many complex steels approaches a more ideal structure. Faster deliveries and less equipment to maintain are extra advantages.

Don't hang crepe on the blooming mill just yet, however. Like everything else, continuous casting has its disadvantages. Everyone in the field admits there are still bugs to be worked out. And considerable further advances are probable, carrying the threat of quick obsolescence of current designs.

A special difficulty is scheduling furnace heats to insure continuity of casting, particularly where various alloys are involved. With killed steels the melt will start to reboil if left in the furnace; if kept in the ladle, it may start a reaction. Either can ruin a heat.

Another major problem at present is the limited number of sizes which can be produced. This will probably be overcome in the near future. The Atlas installation already has provision for multiple nozzles on the tundish to facilitate casting of larger sections.

Existing steel mills will face another problem. Where conventional melt shops and blooming mills have already been established, direct casting will eliminate full use of these units, boost cost of steel processed on them.

# STEEL: 'We'll Make Good Money in '54'

**U. S. Steel's Fairless says plants not made to run at 100 pct of capacity . . . He argues down the calamity howlers . . . How profit trend compares to steel rate—By *J. B. Delaney.***

"Steel plants were never intended nor designed to operate regularly at 100 pct of capacity."

The reminder came this week from Benjamin F. Fairless, chairman of U. S. Steel Corp., as the industry's ingot rate eased off.

What Mr. Fairless said was nothing new to steel men. What makes it news is that he felt compelled to say it. The obvious intention was to offset the calamity howlers who have seized upon the drop in steel operations to bolster predictions of worse things to come.

The record bears Mr. Fairless out. In the last 24 years, the ingot rate exceeded 100 pct of capacity in only 1 year—1951. Even during the war years 1941-1945, the average operating rate was just 94 pct of capacity, about the August '53 rate.

What oftentimes is overlooked, sometimes blindly, is the extent of steel capacity expansion since the war. In 1943, capacity was 90.6 million, compared with approximately 119 million today—an increase of 28 million tons or 31 pct.

As Mr. Fairless pointed out, even if the ingot rate dropped to as low as 81 pct of capacity, this country would still be turning out more steel than during the war years.

"Historically," said Mr. Fairless, "the steel industry has always had to maintain a substantial reserve of capacity for use in time of great national emergency; and at such times it is able to run at 100 pct only by resorting to the uneconomic use of marginal facilities, materials, and manpower."

To those who have been wondering what the steel industry will do to offset a drop in operations, Mr. Fairless' remarks included several important clues: (1) Marginal facilities will be taken out of production, (2) the industry will insist upon top quality materials for production purposes (scrap, for instance), and (3) a full day's work for employees will be stressed.

What effect will a lower ingot rate have on industry earnings? On the basis of past performance (see chart) plus increased efficiency through modernization, the outlook is good.

From 1929 to now, the steel industry lost money in only 5 years—

EVEN if steel industry operated at 81 pct of capacity, it would be making more steel than in war years, said Benjamin Fairless of U. S. Steel Corp.

1938, 1934, 1933, 1932, and 1931. Ingot rates in those years were 39.6, 37.4, 33.1, 19.5, and 37.6, respectively. The industry made money in 1930 when the ingot rate averaged 62.5 pct of capacity, in 1935 when it was 48.7 pct, in 1936 when it was 68.4 pct, in 1937 when it was 72.5 pct and in 1939 at 64.5 pct.

While it is impossible to draw any hard and fast conclusions from the above, the record indicates that when the chips are down the industry knows how to make a dollar.

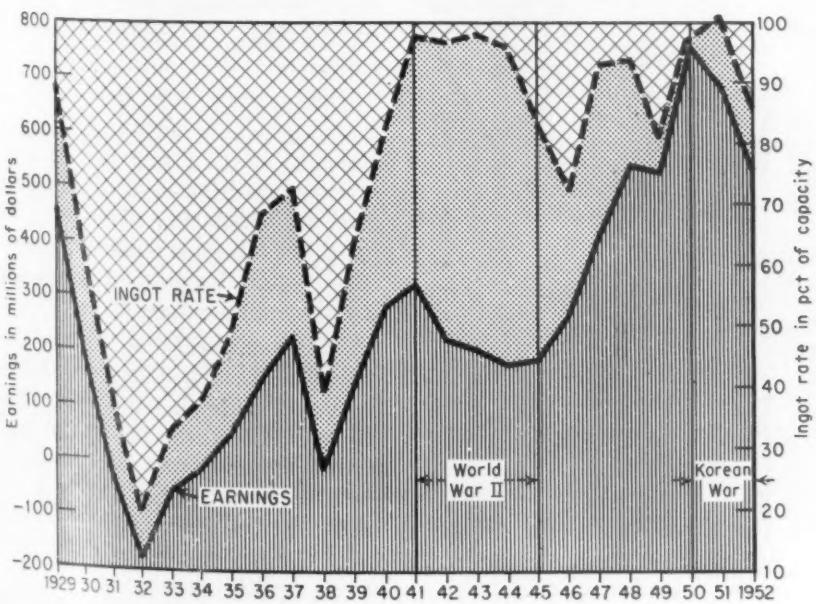
Avery Adams, president of Pittsburgh Steel Co., observed that in 1931 "certain steel companies broke even at an operating rate of 38 pct of capacity." He added that with cost rises since then, it is natural that the break-even point is higher.

"When the going is tough, however, we have found ways and means to cut our costs," said Mr. Adams.

Factors in the industry's favor include (1) Prospect that the excess profits tax will be allowed to die Jan. 1, 1953, (2) increased plant efficiency, (3) prospect of lower costs for some raw materials, particularly steel scrap, (4) opportunity to eliminate overtime work at premium pay, (5) shutdown of marginal facilities to concentrate operations in more modern plants, and (6) reduced inventories.

Offsetting these is the certainty of more competitive conditions with the possibility of reduced profit margins through necessity of freight absorption, and, if the situation warrants, price cutting.

## Trends of Ingot Rate and Net Profits



# BRASS MILLS: May Dip, Not Slump

**August shipments rebound from July vacations . . . First half well over '52 levels . . . Expect to follow general industry trend . . . Shortages over, prices lower—By *R. L. Hatschek.***

Brass mills report their business is currently holding up well. August shipment figures, while still incomplete, show a strong rebound from July with its vacation periods. First half shipments were well over 1952.

But what's in store for the brass mills now? Since brass mill products are so diversified and used so extensively by industry in general, business prospects must closely follow the overall rate of industrial activity. Closest watch should be kept on brass mills' three biggest customers: the automotive, electrical and building appliance industries.

### No Sign Yet

Many business people predict a mild production dip in fourth quarter 1953 or first half 1954. Brass mill sales will probably reflect this trend and decline moderately to a more normal level.

So far there have been no indications of any substantial recession to come. Even in the face of industrial inventory trimming there doesn't seem to be any appreciable slackening yet. This may be partly explained by the recent shortage period. Now, brass mill product users aren't facing anything of this nature any more.

### Shortages Are Over

Nor is there any significant shortage of the raw materials used by brass mills. Only item still on the shortage list is nickel. Because this is a relatively minor alloying material, it is proving to be no burden.

Copper and copper scrap, extremely short less than a year ago, are now in good supply. Zinc, tin and lead, the major alloying metals, are more than plentiful today.

Many in the brass and copper industry sought elimination of price controls during the height of the shortage, maintaining that price limits did more harm by creating or prolonging shortages. It seems they were right.

### Prices Easing

Since removal of price controls early this year the brass mills' major supply problems have evaporated. Almost as soon as lids were lifted raw material supplies began to climb.

Prices of these materials are now about as low or lower than during the controlled period. A year ago copper cost the brass mills an average of 29.30¢ per lb. This was based on 60 pct domestic at 24.50¢ and 40 pct Chilean at 36.50¢.

Now sufficient copper is available at 30.00¢ per lb and the outlook is that it will be coming down. Lead zinc and tin are significantly cheaper than they were under controls.

### Labor Costs Up

Offsetting these lower costs have been increases in wages and freight rates. Unlike some others, there is no set date in the brass mill industry for labor negotiations. Contract renewals come up all the time.

It is difficult, if not impossible, to gage the productive capacity of the industry. Great strides have been taken in plant modernization. Efficiency and productivity have been consistently stepped up and new fabrication methods applied to production of mill products.

Brass mills have not stood on past laurels. Wherever a company thought it could improve its competitive position by diversification the step was taken. Prime example of this is the growing number of firms which have added aluminum to their older lines of products.

This is a natural step since aluminum, brass and copper are interchangeable in many applications. And where one metal will serve better than the others, the salesman with all of them in his sample case can do a bigger service for his customers as well as boosting his own sales.

BREAKDOWN of cast brass bars at Chase Brass. The 2-high mill reduces the bars from 2¼ in. to 0.40 in. in successive rolling operations and one intermediate anneal.

# EXTRUSION: Squeeze New Alloy Shape

**Aircraft firm gets 5 in. long alloy structural parts for $8.90 each . . . Old cost was $29.40 . . . Use modified aluminum press . . . Die design a key to success—By *T. M. Rohan.***

Harvey Machine Co. recently squeezed out what may well lead to significant savings in aircraft production — a hot-extruded alloy steel structural shape. Effects of the development may be felt throughout the metalworking industry.

Working independently under an Air Materiel Command subcontract from Lockheed Aircraft Corp., the firm used a standard 1650-ton horizontal aluminum extrusion press with minor modifications to turn out small extruded alloy steel shapes.

### Costs 70 Pct Less

Extrusions of SAE 8630 steel were cut into 5-in. lengths, drilled and installed on Lockheed military Constellations without further machining to hold large black plastic enclosed radar domes (radomes) in position.

Finished price was $8.90 each compared to $29.40 for parts previously made by machining. Cost of the basic extrusion was $6.20 with only $2.90 for drilling while previous machining from bar stock cost $23.20 plus $6.00 material cost. After heat treating, extruded parts have metallurgical and physical properties similar to forged metals.

### Engineers Are Interested

Work on steel extrusions was launched by Lockheed in an effort to cut costs of certain small parts. Components from three aircraft were selected as being adaptable to extrusion. Harvey continued development on its own and sees a major market in aircraft structural members and regular commercial applications.

A recent closed symposium on the work in Los Angeles jointly sponsored by Lockheed and Harvey attracted top engineers from all over the country.

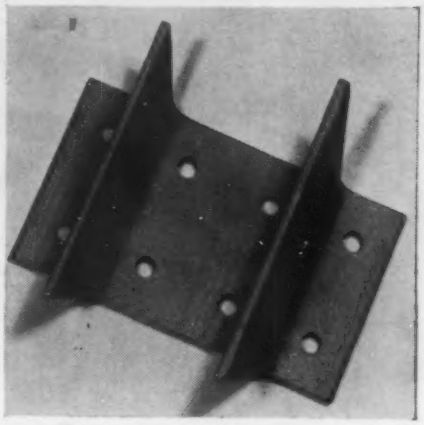
Extrusions have been produced up to 32 ft long with numerous configurations and from 0.100-in. to 0.907-in. section thickness. Largest shapes are 4.5 in. across the top and 2.25 in. high. Other shapes can be developed comparatively easily using data already compiled. One limiting factor is that section thicknesses under ⅛ in. are difficult to extrude at present.

### Dies Wear Rapidly

Preliminary extrusions of titanium shapes were also recently successfully made by Harvey. Using techniques similar to alloy steel, good surfaces were obtained. Even greater savings are probable on titanium due to savings of expensive metal.

Steel must be heated to about 2200 F before it will extrude and must be forced through the die as fast as possible before that too, becomes plastic. Die life is the limiting factor especially in close tolerance work. Maximum obtained so far with close tolerance and good finish is considerably less than 100 charges.

On aluminum, which goes through much more leisurely at 700 F, die life in the thousands is not unusual. This permits close study of wear characteristics.



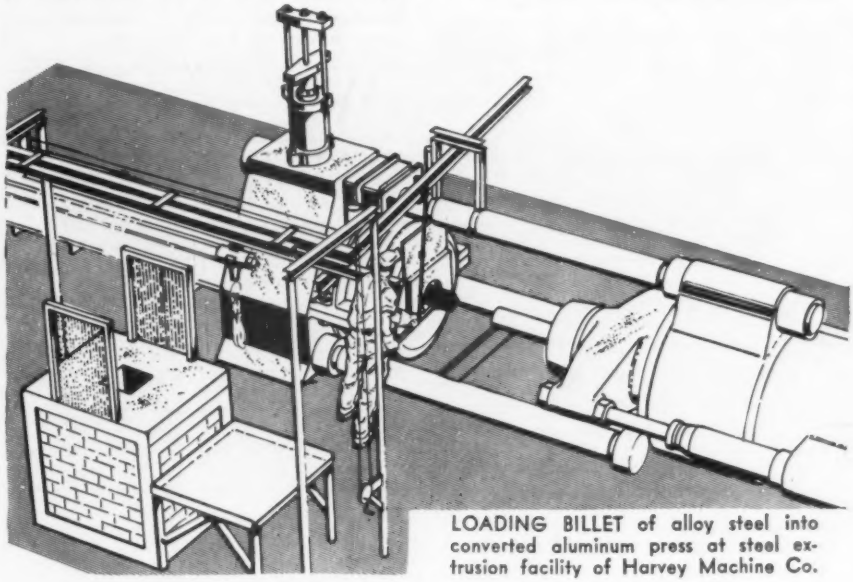
TYPICAL SHAPE hot-extruded from alloy steel for Lockheed Aircraft Corp.

Initial dies used in the Lockheed-Harvey experiments almost washed out completely from the force of the steel at 2200 F shooting through in 2 to 5 seconds at up to 150,000-psi pressure against the die. Dies went out so fast engineers could only guess where erosion started and how it progressed. Slowing down the extrusion speed anneals the die.

### See Longer Life

Only by exhaustive trial and error methods based on studies with aluminum was die life for steel extrusions extended to the present maximum although additional extensions are believed possible.

With a structural shape erosion and wear are accelerated at the larger opening of the juncture of the web and legs. In early experiments this resulted in the thickness of the section gradually in-



LOADING BILLET of alloy steel into converted aluminum press at steel extrusion facility of Harvey Machine Co.

# if it's blast cleaning -

## look to VACU-BLAST

## for the answer

From huge locomotives to small precision parts — or for routine plant maintenance work — there is a Vacu-Blast product designed to suit your blast cleaning needs. In addition to the products listed below, Vacu-Blast also designs and manufactures specialized blasting equipment to handle specific cleaning problems. For the right answers to your blast cleaning questions, it pays to check Vacu-Blast first!

### the vacu-blaster

#### for dust-free blast cleaning

Makes possible abrasive blasting anywhere in your plant while eliminating cleanup costs. The nozzle releases an intensive stream of air and abrasive through the center cone of the gun. Used abrasive and debris are picked up by the vacuum return around the edge of the gun. A surounding brush admits air, preventing the escape of any dust or grit. Spent abrasive and debris are carried off to a reclaimer unit which separates and reuses the cleaned abrasive over and over for maximum economy; dust is filtered by a dust collector unit which releases only clean air. The entire machine is portable for use where needed.

**Belmont Sand Blaster** — A low-cost unit for conventional sand blasting operations. Features include a simple bronze and stainless steel mixing valve and a simple air-operated filling valve. Available with single or double chamber and in portable or stationary models, and with manual or full automatic remote control.

**Belmont Blast Cabinets**—For blast cleaning of small parts within a completely enclosed system. A steady stream of abrasive is impelled against the work by an "annulus type" suction blast nozzle. Pistol-grip blast gun offers easy, balanced operation, finger-tip control.

**Belmont Wet Blast Cabinets** — An enclosed system using abrasive suspended in water for cleaning, deburring and finishing of precision parts. Exclusive "whirlpool" mixer eliminates pump. "Straight flow" blast gun does more work in less time.

**Belmont Blast Rooms** — Designed and built to order for handling vehicles, castings or any type of large assembly requiring blast cleaning.

**Belmont Supersonic Nozzle** — A major advance in blast cleaning, this nozzle incorporates a new type shape. Provides greatly increased muzzle velocity with no increase in amount of air and abrasive used. Actual tests on rusted and painted surfaces prove that it does as much as 25% more work in the same time as standard types. Made of wear-resistant tungsten carbide for longer life.

***Mail coupon now for details on these machines or for other information pertaining to your blast cleaning problems.***

**VACU-BLAST CO. INC.**

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- ☐ Belmont Wet Blast Cabinets
- ☐ Belmont Blast Rooms
- ☐ Belmont Supersonic Nozzle

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creasing as it went through, which would necessitate machining.

Harvey is reluctant to disclose the technique finally evolved beyond saying it resulted from improved die design and a juggling of high temperature lubricants with a variety of the highest quality die steels obtainable. Ram speed of the press was also increased slightly through new valving and the container slightly modified for the 6⅜-in. billets. Extrusion ratios (area of billet section to extrusion section) are from 5:1 to 100:1.

From the aviation industry standpoint, extrusion of steel parts is expected to be a major economy factor, according to Lockheed engineers. Tonnages involved for aircraft are usually too small to economically justify a special set of steel mill rolls or forging dies.

Special shapes impossible to roll or forge such as those with an overhang or very narrow flanges can be made with relatively inexpensive dies.

Metal will also be conserved through elimination of machining. Steel extruded for the Air Force was SAE 4340 and 8632 and types 410 and 431 stainless.

From the military standpoint, constantly increasing aircraft and guided missile speeds have thrown heavier loads and stresses on structural members. It is hoped extrusion will make more steel shapes available at lower cost.

Original phases of the military portion of the development were directed at studying limitations on ratio thickness of various parts and to explore the limits of extrudable configurations. Early work was done on rounds using hardfaced (weldments added to wearing surface) dies with conical faces.

European development has also been heavy based principally on the French Ugine-Sejournet process.

Among firms now extruding tubing are Babcock & Wilcox Co., which has been using the Sejournet process in production since January 1952; National Tube Div., now extruding tubing commercially; and Allegheny Ludlum Steel Corp., tubing and alloy shapes.

FIRST SEVEN huge cores placed in pit.

VACUUM CLEANER removes loose sand from cores.

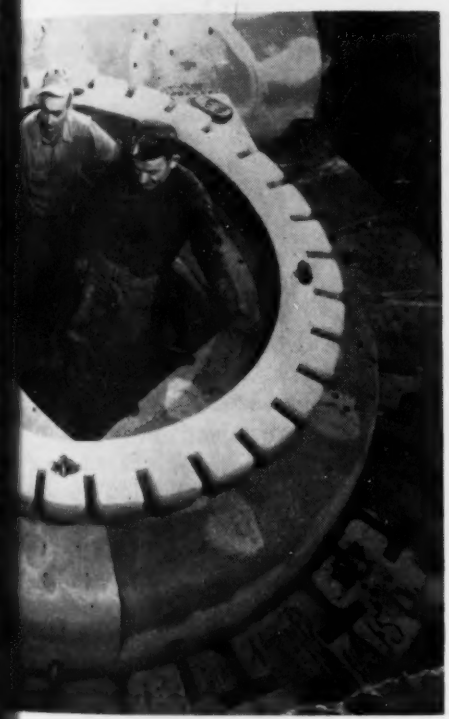
# Cast A Giant

Building blocks of a giant, complex system are themselves giant and complex. This 10-ft OD, 19-ton pump casing is a case in point. Size is obvious. Complexity is indicated by the number of cores needed to form the mold—89.

Claimed to be the largest single-piece pump castings ever produced on the West Coast, they're being produced for the 457-mile Colorado River Aqueduct system. With the addition of four new pumps, the system is capable of delivering up to 650 million gallons of water daily to Los Angeles.

The pump shown in production here will have a capacity of 90,000 gal per min at a 300-ft head. It will be driven by a 9000-hp electric motor.

National Supply Co.'s Torrance, Calif., is claimed to be the only one on the Coast with foundry facilities able to handle a job of this size. And production of this 19-ton pump casing required the biggest equipment in the plant.



TOOTHED RING cores form internal pockets.

ALMOST DONE, only a few of the 89 to go.

CLEANED CASTING ready for machining.

REVERSE DRILLING with underslung attachment.

# ECONOMY: No Plunge in Sight

**Consumer spending will support vigorous market, economist tells foundrymen's meeting . . . Wiley urges continued aid to free nations . . . Marketing research—By E. C. Kellogg.**

Further support to the belief that the U. S. economy will be able to make its post-Korea adjustment without plummeting into a serious recession was given by economist Martin Gainsbrugh at the fifty-fifth annual meeting of the National Foundry Assn. in New York last week. (See p. 7)

Despite some signs of economic weakness that have become more prominent in the last 6 weeks, Mr. Gainsbrugh, chief economist of the National Industrial Conference Board (NICB), said that high consumer spending will offset these trends.

Consumers having been adding to their liquid assets at an extremely rapid rate during the last two years, Mr. Gainsbrugh said. Savings continued at record levels in the third quarter and consumer income is at an all-time high, both in terms of current dollars and purchasing power.

### Business is Best Ever

With distribution of both income and assets broader than at any time in recent history, Mr. Gainsbrugh said the evidence points to a vigorous market, supported by impressive buying power and the intention of consumers to spend.

Though many of the foundrymen attending the meeting wondered how the boom had bypassed them, the NICB economist said the current quarter was the most active period business has ever known. He cited this quarter's 19 pct increase in electric power consumption over a year ago as a key indicator of the current high rate of activity. Freight car loadings were reported up 7-10 pct from a year ago and even sick coal has shown a 4 pct increase.

Evidence of industry's ever increasing interest in international affairs was the presence of Sen. Alexander Wiley, (R), Wisconsin, chairman of the Senate Foreign Relations Committee, as featured speaker at the meeting.

Stressing the point that U. S. security depends largely on the security of other free nations, Sen. Wiley stated that, of all people, members of the foundry industry should realize that of the 38 minerals vital to our economy, America is self-sufficient in only nine. We must go abroad for chromite, tin, industrial diamonds, quartz, mica, nickel, manganese, cobalt and many other needed materials, he said.

"In the face of facts like these, anyone who suggests that the U. S. try to go it alone is merely writing a prescription for national suicide." The Senator said he was opposed to those who say "let's stop the giveaway program."

The Wisconsin senator believes we should continue our mutual aid programs in the Far East and in other countries which are determined to remain free. And he suggested the U. S. form a pact with the Far East similar to agreements we already have with West Europe and Latin America.

"Of course he'd be no use to anyone who doesn't smoke."

Sen. Wiley told the foundrymen the government should release as much information about atomic and hydrogen bombs as national security permits. This he believes would make the public more aware of the need for adequate defenses and would slow Red aggression.

### Need Improved Communications

Importance of effective communications in plant operations was emphasized by Dr. E. M. Gherman, E. M. Gherman & Co., management consultants. He said he couldn't understand how management's orders ever get to the man on the job correctly.

Breakdown of personal communication was vividly demonstrated during the talk. Five members attending the meeting were sent out of the room and a detailed slide showing a number of people on a bus was projected on a screen. The slide was turned off, and one of the members was asked to describe what he had seen to one of the men who had remained outside. This man in turn told a second man what he remembered. This process was repeated several times, with the result that the only information the last man received was that "there were some men outside somewhere."

Frank Juraschek, assistant director, Distribution & Availability, U. S. Steel Corp., told the foundry group that the main function of marketing research is to take the guesswork out of management's business decisions.

### Keep Accident Records

It can be used to determine such factors as: (1) Is your product good and is it filling a definite need? (2) tell you who needs your products, (3) help you develop a sales story that fits the product to the need and,(4) enable you to make it easier for users to buy.

Talking about management's responsibility for plant safety, W. J. Smale, vice-president, Michigan Mutual Liability Co., said most of the nation's foundrymen have done a good job in reducing hazards, but a few are lagging.

# PAYROLLS: New Hoover Group Whets Ax

**New 12-man commission to take up where old one stopped . . . Main jobs will be trimming fat, cutting deadwood, saving money . . . Eye overseas staffs—By *A. K. Rannells.***

Birth of Hoover Commission, Jr., (12 members) is scheduled for next week with a new group to be sworn in to take up where the old commission left off.

Work of the earlier group was primarily concerned with reorganizing and streamlining the far-flung, complicated Federal Government for greatest administrative efficiency.

### Trim Fat, Save Money

Many of the recommended organizational changes have now been put into effect by the White House with the consent of Congress. But belief persists that from an administrative point of view the Federal Government is still too large for its own good.

Main job of the new commission will be trimming fat, chopping deadwood from payrolls. Another goal is to save money, if possible increase the cut of at least $2.5 billion in federal spending which Treasury Secretary George Humphrey and Budget Director Joe Dodge foresee for the current fiscal year.

### Offset Payroll Savings

But don't expect much money savings from payroll cuts, even after an uncompromising wielding of the pruning knife. Payroll expenditure accounts at present for about 13 pct of total government cost. It will take a more substantial reduction in manpower than is now in the cards to affect the budget materially.

Such savings are often offset by other factors. Last year, for example, federal civilian employment was cut 5 to 6 pct, largely since January. But pay-out for personal services rose $322 million, or about 3 pct.

Payment of lump sum terminal leave and pay increases for remaining personnel were the main reasons, according to the Byrd Senate-House Committee on Non-Essential Executive Expenditures.

Problem facing the Hoover Committee is where to cut. First thought, perhaps, would be to speed up the paring of emergency agencies. A year ago, total employment by these agencies was listed at 19,600, with about 16,500 within the Economic Stabilization Agency.

Its demise, plus shriveling of other emergency bureaus, left the July 1953 total at slightly more than 4000. Some 1100 were on Mutual Security Agency rolls.

But this was not a clear cutback of 15,000 employees. Many in the emergency agencies were on loan from old-time bureaus and have since been re-absorbed.

Some, like the Defense Dept., are taking the bull by the horns. Over the past fiscal year military agencies have whacked more than 92,000 from their combined payrolls.

SPECIAL transfer mechanism to index, advance and unload 22-lb brake drums through a 600-ton coining press has been developed by Sahlin Engineering Co.

Despite this sizable reduction, civilian employment by military agencies as of July still totaled more than 1,247,000, including those abroad—and still more than one-half of all federal employees.

But more military cuts are pending regardless of the Hoover group. Last week, for example, the Army announced it is ordering further reductions, is instructing field commanders to postpone all possible projects.

Some of the future reductions will be made in industrial employment, mainly in construction, in shipyards, and in arsenals. Attempt will be made to shift more defense production to private industry plants.

### Cut Overseas Staffs

Number of industrial workers dropped last fiscal year amounted to more than 64,000, leaving a July total of about 752,000 after deducting 4000 separations in August.

Some believe overseas employment by both military and civilian agencies may be fruitful ground for the commission. Indications also are that the next congressional session will lean less toward dollar aid and more toward international trade as aid to other countries—making for smaller staffs.

Be that as it may, overseas employment has been least touched by personnel reductions. Net reduction in overseas payrolls totals 6000. Counting native employees, federal employment of civilians overseas still adds up to more than 178,000.

## Service Continues on Waterways

Interstate Commerce Commission has granted Federal Barge Lines, Inc., subsidiary of the St. Louis Shipbuilding & Steel Co., temporary 180-day authority to operate formerly government-owned Inland Waterways Services.

Temporary authority was granted to permit continuation of service pending completion of the $9 million sale of the government waterways service to Federal Barge Lines.

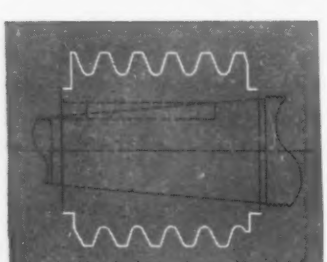
# CLASS AA HOBS

## *Cut Consistently Better Gears!*

**GET GREATER NUMBER OF CLOSE TOLERANCE GEARS**

Although the hob is not the only factor affecting the accuracy of gears, it does have an important effect, particularly upon the accuracy of the profile. Class AA hobs are made to consistently closer tolerances than any other hobs and have proved themselves in actual production for many years. Performance records show that Class AA hobs produce more gears with close tolerances than any other hobs.

**TAPER BORE HOBS EASIER TO MOUNT ON MACHINE**



Class AA hobs with taper bore are recommended for the utmost in precision where other conditions warrant the use of a tool of this class. The accuracy of the tool, however, may be lost if the hob is not properly mounted on the machine. Compared with the sliding contact on straight hole hobs, the taper provides metal-to-metal contact, eliminating the possibility of an increase in runout during the cutting operation. Time is also saved for the operator because the hob will run as true as the spindle.

Production-line accuracy in all metal cutting operations is constantly approaching closer limits. Gear hobbing is perhaps the outstanding example. When you have gear tooth problems, be sure to ask Barber-Colman Hobbing Engineers to work with you. Their long experience in gear cutting is available to you without cost or obligation.

**WRITE FOR A COPY OF HOBBING NOTES — "HOBBING ACCURATE GEARS"**

BARBER COLMAN

**Barber-Colman Company**

GENERAL OFFICES AND PLANT, 7119 ROCK STREET, ROCKFORD, ILLINOIS




# SAE: Users Switch

**Farm machinery makers turn to standard grades . . . Meeting hears the experts.**

Boron steels are losing ground, with a return to conventional SAE low alloy grades in the offing, according to engineers, metallurgists and executives attending the Society of Automotive Engineers Tractor Meeting and Production Forum in Milwaukee last week.

While some applications will probably remain, particularly for cold upset products, most tractor and farm equipment producers are making the switch to non-boron steels.

### Boron Disadvantages

Probably the largest and most enthusiastic users of boron steels in this country, these producers say that a combination of factors has contributed to changes they are making in specifications. Higher prices, excessive core hardness contributing to distortion on quenching, particularly in low-carbon types, and variation from heat to heat were cited against boron steels.

Seven panels of experts answered questions and debated differences of engineering opinion and experience. Among their findings and recommendations were:

### Outline High Spots

Failure to pretreat steels properly before machining may be responsible for many gear failures. Comparatively long pre-machining treatment is good for most gears. Shot peening gives optimum results where austenite occurs in the case.

A master production schedule designed cooperatively by engineering, sales, factory management and planning, and top executives has shown promise.

Trend to leaner alloy steels continues. Most popular grades seem to be SAE 8600 and 4600. Cycle anneals are gaining popularity. Use of a direct quench for carburizing steels often results in

## From Boron Steels

excessive distortion. Reheating usually gives parts a more desirable structure.

The machine tool panel reported jet lubrication may not give adequate coverage. Vapor spray, successful in some applications, may cause operator discomfort.

### Use Ceramic Tools

Water-soluble coolants, also successful in some uses, may result in condensation in recesses of machine tools causing corrosion. Some tool builders are designing machinery either to avoid this completely or provide drainage. Problem seems chronic in hobbing operations.

British use of ceramic tools for limited operations was discussed. These tools are very fragile and unsuitable for interrupted cuts and for some materials.

In covering machine tool replacement it was pointed out that tools might be amortized in 2½ years when tax calculations are omitted. But allowing for taxes 7 years may be required.

Air-controlled lathes are being considered to replace hydraulic and cam types.

### Sigma Welding to Grow

Industry is generally not ready for many of the higher speeds and feeds for metal removal often mentioned by tool engineers. Most record speeds and feeds reported apply to specific cases with many favorable factors.

Sigma welding is getting considerable attention and the number of production applications is expected to grow. Using this method, 30 or 40 lb of metal per hour can be deposited compared to 3 to 10 lb per hour by other common techniques.

Four-wheel drives were recommended for more work vehicles. The Regenomatic transmission which drives laterally rigid wheels and puts power on every wheel was described. Steering is by variable wheel speeds on either side as on military tanks.


WYANDOTTE CHEMICALS

**Specialists in Industrial Cleaning Products**

# "Wyandotte Industrial No. 6 is the BEST NEUTRALIZER we've ever used!"—*Magic Chef, Inc.*

Magic Chef, Inc., St. Louis, Missouri, produces high quality ranges. Naturally, they demand high quality products in their processing operations. Read what they say about Wyandotte Industrial No. 6:

"Industrial No. 6 completely eliminated two problems we previously had," reports Mr. Martin Haselhorst, Enamel Superintendent at Magic Chef. "One was the hanging which resulted where two pieces of ware touched in the pickle basket to cause slow draining of ordinary neutralizer solutions.

"The other problem was excessive foaming which made it impossible to operate the neutralizer tank at more than 190° F. At this temperature the drying of the ware was a problem.

"Wyandotte Industrial No. 6 has eliminated the hanging which reduced 'wash-off' considerably. Also, we now get better drying because we can raise the neutralizer bath's temperature to 210° F. without a foaming problem.

"We also use another specialized Wyandotte product with excellent results for alkaline cleaning in our pickling department. With the use of Wyandotte cleaners we have been able to reduce our costs and improve our products."

Ask your Wyandotte metal-cleaning specialist to work with you to reduce costs, do a better job with Wyandotte's complete line of specialized cleaning products. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Angeles 12, California.*

CLEANING THE WORLD

**Largest manufacturers of specialized cleaning products for business and industry**

Wyandotte CHEMICALS

*Helpful service representatives in 138 cities in the United States and Canada*

# DOLLARS: Change Global Landscape

**Overseas investment by private industry up $6.5 billion in 6 years . . . Stock holdings dip . . . Oil takes $3 billion . . . Spend $88 million on foreign iron output—By *R. M. Stroupe.***

Oil derricks rising near the Persian Gulf offer pointed illustrations of the way U. S. capital, invested privately, is changing the world landscape.

Just as clearly, the truck assembly plant in Brazil and the abrasives factory in Italy, both built with American dollars, attest to the stimulating results produced by wise injections of ready cash. Over much of the globe, sound money from this country is being teamed with plentiful labor, an accessible market, and favorable operating conditions to bolster shaky economic systems.

### Add $6.5 Billion

Private monetary stakes in nations abroad now total more than $21 billion. Of this amount, $13.2 billion is in the direct investment category—plants, machinery, distribution apparatus. As outlays in this field have climbed, investments in foreign stocks and bonds have declined, currently amounting to about $4.5 billion.

During the 6-year period ended in 1951, American businessmen added $6.5 billion to their direct investments in non-U. S. territory. This figure comprises both new capital outflow and retained profits, the latter widely used to expand and modernize plants.

Investments in petroleum production account for $3 billion of the $6.5 billion net addition. There is steady growth in outlays for manufacturing facilities, reflecting the increasing importance of new U. S. industries. As the building materials, synthetic fibers, and chemical products industries, for example, have gained financial stature, management has opened branch facilities abroad.

U. S. Commerce Dept. has figures through 1950 giving the value of direct investment in the manufacture of chemicals and allied products on foreign soil as more than $518 million. Totals for machinery, other than electrical machinery, add up to $419.9 million; for primary and fabricated metals production, $383.8 million.

### Metals Investments Rise

Motor vehicle manufacturers have made very substantial direct outlays in 27 countries, ranging from Argentina to Australia, and from Mexico to Yugoslavia. Of about one dozen manufacturing plants, four are in England and three in Canada.

Backing up these primary facilities are 103 assembly plants, 61 of them distributor owned. An unofficial estimate puts U. S. funds in all types of automotive plants abroad at about $500 million.

A recent report from Office of International Trade, Commerce Dept., notes that in 1951 about $150 million in American funds went into foreign mining and smelting operations alone. This amount was appreciably higher than the rate of dollar investment in the same field during the previous 5 years. In the opinion of OIT, the 1951 figure "is probably more representative of the annual rate for the near future."

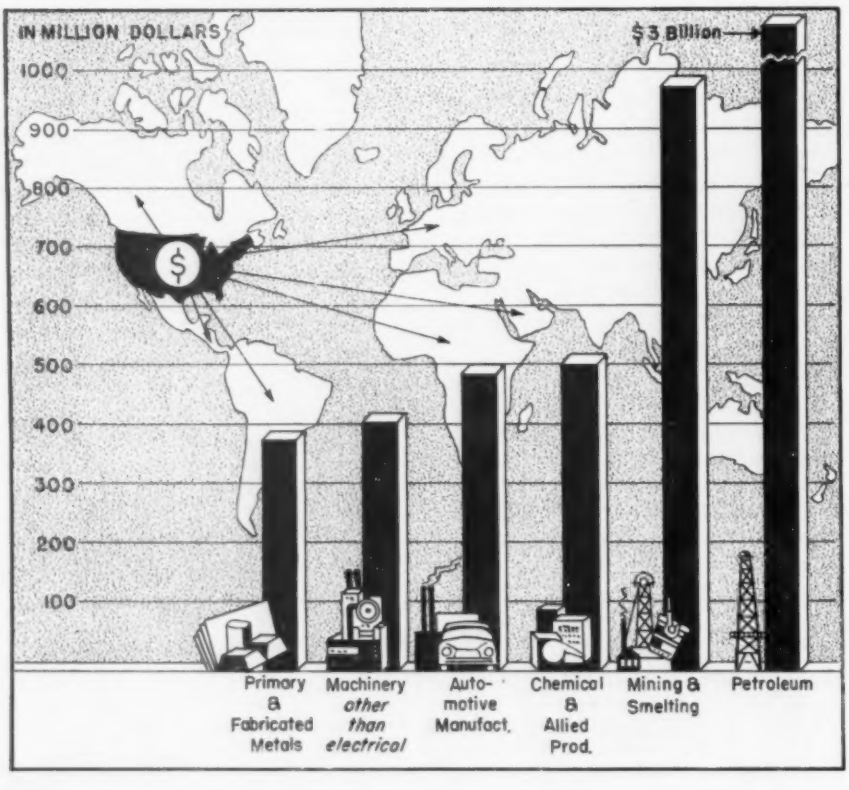
### Iron Takes $88 Million

"Large investments," according to the report, "are now in process or are contemplated in the iron ore of Canada, Venezuela, and Liberia, the bauxite, titanium, and other metals of Canada and the West Indies, the copper of Peru and Chile, the manganese of Brazil," and other materials elsewhere.

Mining and smelting in the foreign iron field has required more than $88 million in direct U. S. outlays through 1950. Total for precious-metal production is about $75 million, and for other metals approximately $862 million.

Government calculations through 1950 showed Latin America was the site for investment of about

## Where, How Industry Exports Money



40 pct of all U. S. direct private investment. Though there are currency exchange difficulties in dealing with about half the Latin states, experience thus far has worked generally to the profit of the businessman with Central and South American holdings.

Western European investment at the same time accounted for 15 pct of the U. S. total. More than half of the money involved went into manufacturing activities. The Near East and Africa have claimed about 5 pct of American private investment capital, with four-fifths of the amount going into oil. In the Far East, patent licensing and private technical aid have outweighed dollar outlays for plants.

Four major factors, Commerce Dept. says, impede greater investment by the U. S. businessman: trade and currency imbalances; "economic nationalism," often characterized by tightly-held foreign government restrictions on profits; unstable factors within those governments; and "low levels of economic development," placing barriers on demand.

## Iron Ore:

**New Inco development will yield iron ore as byproduct.**

High-grade iron ore is being added to the list of byproducts resulting from the mining and refining of nickel ore by International Nickel Co. The firm announced last week that it is starting work on a $16 million pyrrhotite treatment plant.

To be built by Fraser-Brace Engineering Co. in cooperation with Inco, the plant will be located in the Copper Cliff area of Ontario and is scheduled for initial operation sometime in 1956. Eventual production will include about 1 million tons of 65 pct iron ore annually—also nickel, copper.

Added income from sales of this openhearth-grade ore will enable Inco to utilize low-grade nickel-bearing pyrrhotite from the Sudbury district which was previously considered uneconomical.

PHOSPHATE COATINGS for metals are tested under extreme humidity at Pennsalt.

## Market New Paint Bond Line

Pennsylvania Salt Mfg. Co. entered the paint-bond field last week with the introduction of its new Fosbond line, a series of compounds for phosphatizing metals to provide corrosion resistance and improve paint bonding.

For the past several years Pennsalt has been manufacturing phosphate coatings, metal cleaners and lubricants for cold-working steel. Addition of the Fosbond line virtually completes the company's list of metal processing chemicals.

Phosphate coating are used by industry to give metal a stable, controllable, chemically bonded crystalline surface. In cold-working this coating provides a bond which holds lubricants even under the severe pressure encountered in presses.

Used for paint bonding, the coating provides a strong bond for the organic finish applied to the metal and also prevents corrosion under the finish. In other applications such as on ordnance items, phosphate coating are used alone to protect parts from corrosion and wear.

Pennsalt's new Fosbond line includes iron phosphate, zinc phosphate and manganese phosphate coatings. The company has also developed a new line of compounds for surface preparation prior to painting.

FRONT PANEL of a steel television camera is spray-painted after application of Fosbond coating, used to provide a better paint bond.

# ODM:

**Chief mobilizer Flemming denies "single source" policy.**

High-level civilian agency and military planners are having no trouble in seeing eye to eye on the extent of the industrial mobilization base needed for rapid defense build-up in a crisis.

In substance, that is the view of Arthur S. Flemming, who holds a major planning post as chief of the Office of Defense Mobilization. There is, he says, the "finest and best cooperation" between ODM and Defense Dept. on the subject of the production potential the U. S. must have to meet an aggressor's attack.

### Agree With Defense Dept.

The idea of "filling in gaps" in the mobilization base is still very much alive, according to Mr. Flemming. One essential element which ODM would use in working out this special program is a statement of projected military requirements.

Mr. Flemming questions the accuracy of assuming that Defense Dept. has a policy of seeking a "single source" for production of end-items. He says categorically there is no such policy, though he agrees the military is reducing, by plan, the number of sources from which it will make certain procurements.

(A Defense Dept. spokesman also stated last week that there is no "single source" program in progress at the Pentagon. Defense Secretary Wilson, he said, wants contracts placed with those producers whose firms are the most efficient, best financed, and best administered. In keeping with these criteria, the number of suppliers is being thinned, he added.)

## Get Subcontracts for Atom Plant

U. S. Atomic Energy Commission has approved seven subcontracts for supplies and construction at the new gaseous diffusion plant now under construction in Pike County, Ohio.

Firms awarded subcontracts for substation supplies are Allis-Chalmers, $4,337,527; General Electric, $3,433,996; Westinghouse, $975,200, and Federal Electric Products, $122,350.

Construction contracts were awarded Eichleay Corp. ($1,810,-202) and Altman-Coady ($123,362).

Lake Shore Electric Corp. was awarded a $535,000 contract for construction of auxiliary power panels.

Peter Kiewit Sons, prime contractor, awarded the subcontracts.

# Planes:

**Air Force engine cutbacks to spare few jet, piston types.**

Almost all jet and piston engine types made for the Air Force will be affected by cancellation orders forecast last week by Air Force Secretary Harold E. Talbott.

Reason for the action, according to Mr. Talbott, is twofold: His department wants to fill requirements for new engines to power the forthcoming fighters, such as the F-100, F-101 and F-105; also, the Air Force plans to put added emphasis on development and procurement of turbo-prop engines. Latter are to get extensive use in transport and tanker planes.

Savings resulting from the cancellation, according to Mr. Talbott's "conservative estimate," will amount to $400 million to $500 million.

General Electric Co., Mr. Talbott states, is the company that will be most affected by the erasing of engine orders. Production of the GE J-47 engine, used in the B-47 bomber, at both Evendale, Ohio, and West Lynn, Mass., will go on at a lower rate, the Air Force chief said.

He predicted that "this new engine program will not adversely affect the Air Force's capacity to equip 143 wings." This statement is expected to put to rest, temporarily at least, doubts that the 120-wing goal determined for the Air Force by Defense Secretary Wilson earlier this year is not a temporary target.

Mr. Talbott visualizes faster-than-scheduled aircraft engine production by a number of automotive firms, among them Packard, Studebaker, Buick, and Chevrolet, who are licensees in the field. Ford is now seen as "second source" for the J-57 engine.

"I guess I drink a lot because it's the only thing I can do really well."

## Army Gets New Top Scientist

Policy decisions on Army scientific matters will become the principal responsibility of Dr. John E. Vance, head of the chemistry department of Washington Square College, New York University.

On Oct. 1, Dr. Vance takes over as deputy chief of research and development and chief scientist of the Army. He succeeds Dr. Harold V. Gaskill.

## Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Transmission, 6, $467,670, General Motors Corp., Indianapolis, *H. S. Bowden.*

Automatic screw machine, 20, $126,150, Cosa Corp., New York.

Lathes, 4, $87,298, Jones & Lamson Machine Co., Springfield, Vt.

Lathe, engine, 6, $74,679, Axelson Mfg. Co., Los Angeles.

Tachometer indicators, 1113, $122,207, General Electric Co., Schenectady, N. Y.

Torque wrench sets, $132,670, B. K. Sweeney Mfg. Co., Denver.

Air flasks, fuel tanks, and naval tanks, 1410 ea, $3,379,706, A. O. Smith Corp., Milwaukee.

Hydropneumatic high pressure air, inert gas compression transfer machine, 1 ea, $64,594, Geer Hydraulics, Inc., Brooklyn.

Replenishment of combat vehicle parts, 650, $25,545, DuPage Gear & Machine Co. Elmhurst, Ill.

Replenishment of hardware, 2900, $31,-581, Rockford Clutch Div., Rockford, Ill.

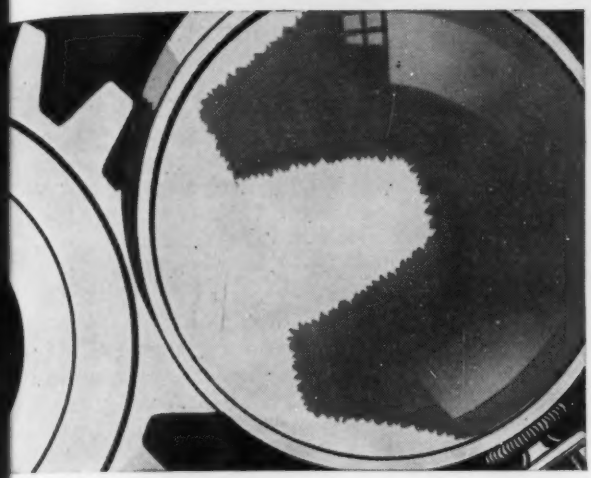
Replenishment of hardware, 20000, $66,-600, Detroit Aluminum & Brass, Detroit.

Spare parts, component assembly, $110,-000, General Electric Co., Washington.

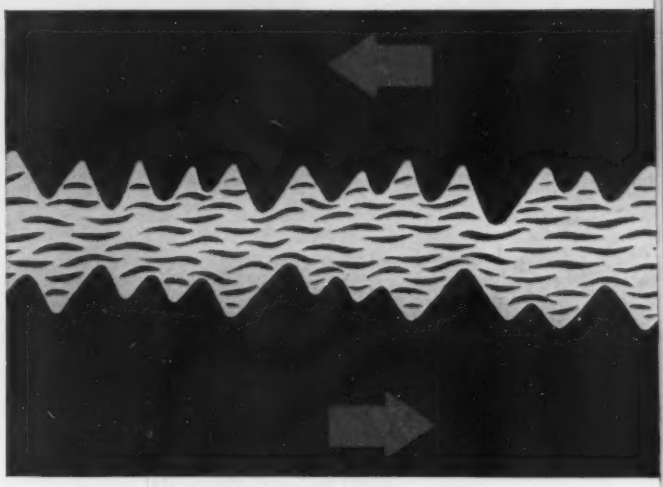
Auxiliary detonating fuzes, Mk, 52 for VT fuzes, 635000 ea, $679,834, Swank, Inc. Attleboro, Mass.

Wrenches, assy, V, spanner, 2911, $98,-915, Frontier Industries, Inc., Buffalo.

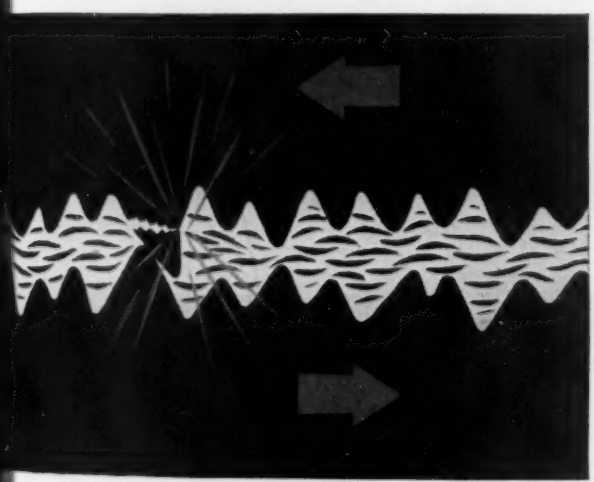
# HOW SUNEP PREVENTS GEAR WEAR



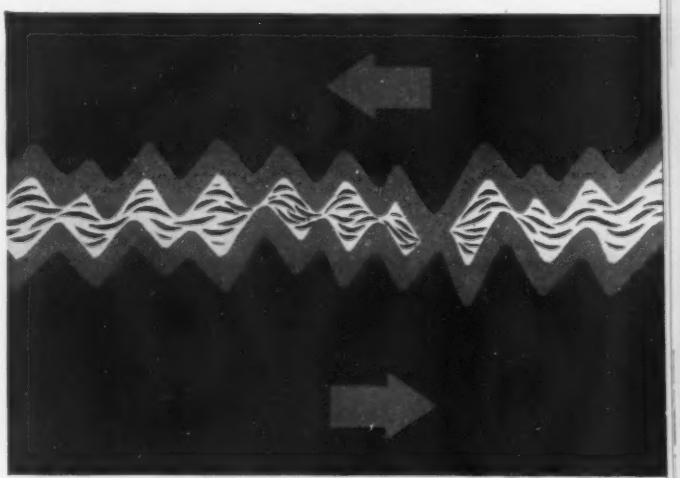
The surface of a gear may seem smooth, but when greatly magnified it looks something like this. The lubricant must keep these jagged edges apart.



With ordinary oil, a thick film is needed to keep these metal surfaces apart. The thickness of the film depends on the viscosity of the oil and other factors.



It is difficult to maintain a thick oil-film in everyday practice. The oil film thins out and semiboundary lubrication results. With ordinary oil, metal to metal contact occurs and gears wear.



Sunep coats the surfaces with a chemically bonded film which is virtually unbreakable. This film, although only about 0.0000001" thick, keeps the surfaces apart, withstands heavy loads and sudden shocks, prevents wear.

Sunep has many advantages. In addition to its outstanding load-carrying ability, it is noncorrosive; it keeps gears and bearings clean; it prevents rusting; it stays put. And its additives do not drop out during use or after prolonged storage. For more information about Sunep and how it protects your equipment, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. IA-9.

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**SUN OIL COMPANY**

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WHAT'S THE FASTEST WAY TO CLEAN METAL?
*See page 11*
WHAT'S THE MOST ECONOMICAL WAY?
*See page 9*

**This FREE booklet on Metal Cleaning** helps you get better production, larger profits. Among its subjects are:

| | |
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| Machine cleaning | Tank cleaning |
| Electrocleaning | Pickling |
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**FREE** Write Oakite Products, Inc., 30H Rector St., New York 6, N. Y., for the 44-page booklet: *"Some good things to know about Metal Cleaning."*

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WHAT'S THE BEST WAY TO STRIP PAINT FROM METAL PARTS TOO LARGE TO BE SOAKED IN TANKS?
*See page 3*

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¶How to strip metal parts in large volume? *See page 9.*

¶How to strip oil-base paints? synthetic enamels? lacquers? alkyds? phenolics? ureas? *See page 12.*

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**OAKITE**
MATERIALS • METHODS • SERVICE

*Technical Service Representatives Located in Principal Cities of United States and Canada*

# Industrial Briefs

**Big Doings** . . . CONTROLLERS INSTITUTE OF AMERICA will hold its 22nd annual meeting on Sept. 26-30 at the Hotel Statler, Boston. Conferences of controllers from the metals manufacturing and the mining and extractive fields will be among 16 such gatherings to be held in conjunction with the meeting.

**Importing Ore** . . . TENNESSEE COAL & IRON DIV., U. S. Steel Corp. is importing about 50,000 tons of iron ore per month from Peru for use in its blast furnaces at Birmingham. Shipments consist of four cargoes per month.

**Expanding** . . . NATIONAL WELDING EQUIPMENT CO., California, has purchased buildings and parking space adjacent to its present plants for expansion of its Engineering and Development Depts., shop, and storerooms.

**Changes Made** . . . The W. G. Le Count Tool Works, Norwalk, Conn., has recently been incorporated as THE LE COUNT TOOL WORKS, INC., and has moved to larger quarters in Hartford.

**Aluminum Skyscraper** . . . ALUMINUM CO. OF AMERICA dedicated its 410 ft Alcoa Bldg., America's first aluminum skyscraper, in the heart of Pittsburgh's Golden Triangle recently, marking completion of the lightest building for its size ever built.

**Award of Honor** . . . FERRO CORP.'s Cleveland plant was given an "Award of Honor," the highest safety award industry can earn, by the National Safety Council.

**Exclusive Basis** . . . REPUBLIC STEEL KITCHENS has appointed Northern Ohio Appliance Corp., Cleveland, its exclusive northeastern Ohio distributor.

**New Location** . . . The Advertising Dept., CRUCIBLE STEEL CO. OF AMERICA, Trent Tube Co., and Rem-Cru Titanium, Inc., is now located on the 23rd floor of the Oliver Bldg., Pittsburgh. It was formerly in Crucible's New York Offices.

**Names Officers** . . . PRESSED METAL INSTITUTE has elected George A. Bentley, sales manager, of Detroit Stamping Co., to the post of chairman of the Michigan District. Russell Anger, president of Anger Mfg. Co., is new program chairman.

**New Moniker** . . . CONSOLIDATED METAL PRODUCTS CORP. was the name stockholders voted on for the former Consolidated Car-Heating Co., Inc., Albany.

**Making History** . . . LAKE CARRIERS ASSN. reports that for the first time Great Lakes Ore Vessels have hauled over 15 million tons in one month. The new mark was set in August when 15,236,527 tons were transported to lower Lake ports.

**To Build** . . . NATIONAL SUPPLY CO. has awarded a contract for design and construction of a divisional warehouse and office at Alice, Texas, to Walter Kidde Constructors, Inc. The building is expected to be completed by Nov. 15, 1953.

**Named** . . . ALLIS-CHALMERS MFG. CO., Milwaukee, has named American Iron-Steel Mfg. Co., St. Louis, a distributor.

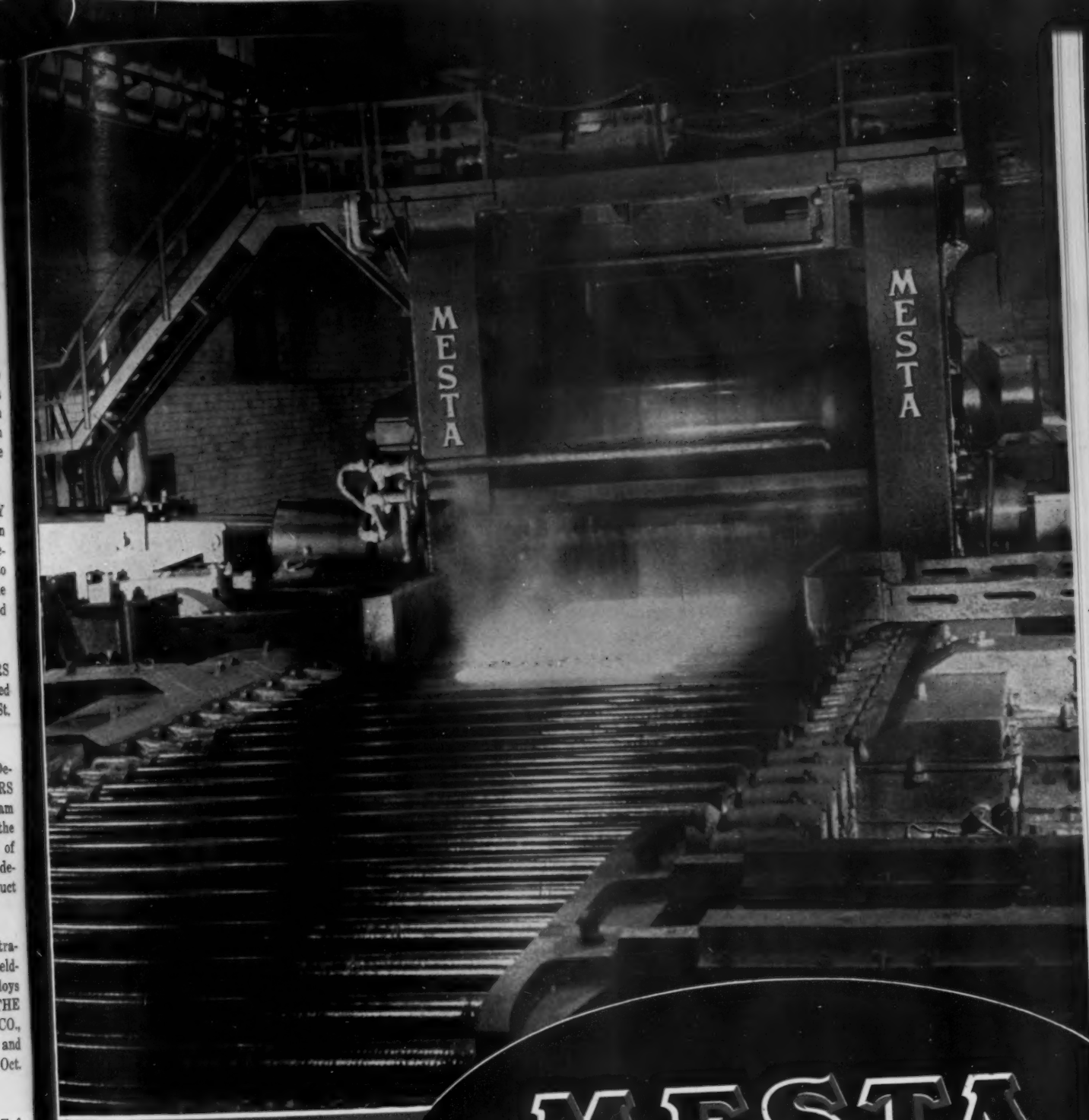
**Training Program** . . . New Departure Div., of GENERAL MOTORS CORP. now has a training program for bearing field servicemen on the proper application and handling of precision ball bearings. Plan is designed to assure maximum product performance.

**Highlight** . . . Welding demonstrations using the most up-to-date welding techniques with high-nickel alloys will highlight participation of THE INTERNATIONAL NICKEL CO., INC., in the J. M. Tull Metal Show and Welding Clinic in Atlanta, Ga., Oct. 7-9.

**Financing Plan** . . . THE YALE & TOWNE MFG. CO. has a new flexible financing service for the sale and lease of industrial lift trucks. This service has been instituted by the company in New York through a wholly owned subsidiary, The MHE Corp.

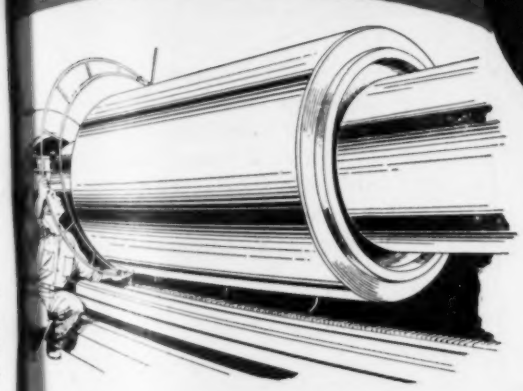
**New Quarters** . . . ROCKWELL MFG. CO., Pittsburgh, has leased a 70,000-sq-ft three-story factory building owned by Lawson Mfg. Co. in order to expand its power tool manufacturing operations at 300 N. Lexington Ave., Pittsburgh.

**Cleveland Meeting** . . . MEEHANITE METAL CORP., New Rochelle, N. Y., will hold its annual research meeting at the Hotel Cleveland, Nov. 4-6.




MESTA 160" FOUR-HIGH
REVERSING PLATE MILL

# MESTA
# PLATE MILLS



FINISH GRINDING A LARGE MESTA BACKING-UP ROLL
IN A MESTA HEAVY DUTY ROLL GRINDER

*Designers and Builders of Complete Steel Plants*

**MESTA MACHINE COMPANY**

PITTSBURGH, PENNSYLVANIA

# Luxury Car Makers Bank on Profits

**Top sales year for top price models seen for '54, despite expected decline generally . . . See public demand for quality, costly appliances . . . Push the plush—By *R. D. Raddant.***

Makers of plush, luxury cars with high-powered engines under the hood and quality appeal in their advertising are getting ready for a top year in 1954.

They hope that sales records rolled up a year from now will show dollar and unit returns that will warm their corporate hearts and production records that will show a bigger share of the market.

**Plan Big Year** . . . This may sound a little contradictory. It is generally assumed that 1954 will not be a peak year industry-wide and that sales will fall off from the pace set earlier this year. And it is the pattern of history that in a falling market the higher priced items are the first to feel the impact.

But this won't be the case in 1954, if plans of caterers to the carriage trade indicate anything. They are making plans for a top year in an otherwise sliding market. Why?

**They Want Quality** . . . According to J. M. Roche, Cadillac's general sales manager, demand for quality cars is on the increase and so is the demand for expensive appliances.

"Economic trends and increasing public desire for quality and comfort features give promise of a rapidly growing demand in months ahead for automobiles of the fine car class," Mr. Roche contends.

"Demand for the Cadillac and overwhelming customer interest in new features like the Cadillac air conditioner make prospects exceptionally favorable."

**Packard Pushes Plush** . . . Packard, once the unchallenged leader in the luxury field, is also counting on a bigger market in 1954 for its expensive lines. A year ago, James Nance, Packard's new president, pointed frankly to an increasing number of $10,000-a-year men in stating plans for a comeback in this direction.

So far this year, Packard's increase in its luxury line is running far ahead of increases in the Clipper. Since this is the first year since the separation of Packard's output into two classifications, the high priced Packard and the medium priced Clipper, Packard is confident that even more gains are in line for luxury models in the forthcoming year. A more marked difference between the two lines is in progress with this in mind.

Lincoln is also expanding plans for increased production and Chrysler is confident of increased sales in its expensive models.

**Luxury Backlog** . . . During 1952, some manufacturers in the medium price field almost met disaster by overestimating the market. They scheduled production on the optimistic theory that a bigger share of the market was to be had. Obviously, everybody couldn't get a bigger share and casualties followed.

"I'll say this for Parina, he sure follows through on his Continental ideas."

This didn't occur in the top price bracket. Furthermore, the GM fire stopped Cadillac production for weeks and Lincoln for months. If there is any backlog of demand when the 1954 season starts, it will be at the top of the price schedule.

**Restyle With Synthetics** . . . A shopper for a new 1954 car will find an array of upholstery types that challenges the imagination. In many instances, particularly where basic models were changed only moderately, emphasis has been on the interior.

Results have been amazing. But not only are the colors and fabrics new and different, but the materials themselves will have unfamiliar names in many cases.

For many years the principal fibers were natural wool, cotton and mohair. Acetate and viscose were added and also the now familiar names of strong, durable Nylon and tough, washable Orlon. But at least eight new synthetic fibers are now ready in commercial quantities.

**Outlast the Car** . . . These eight are Dacron, Dynel, Acrilan, X-51, Perlon, Kuralon, Saran and Vicara. Each has individual characteristics that can be adapted to car interiors, either alone or in combination, in development of the strong, comfortable, color-fast materials required in present day automotive upholstery.

A recent SAE paper indicates that synthetic fabrics will outwear wool by 10 to 1 and can easily outlast the life of the car. The natural and synthetic fabrics listed above can be combined for 105 two-fiber mixtures or 3000 five-fiber blends.

**Use Sharp Pencils** . . . Behind the awarding of the contract to produce M-48 Patton tanks to General Motors is the story of some of

the closest figuring that ever went into bidding on an Ordnance contract.

Ever since the "single source" policy designated that the $200 million contract would go to Chrysler or GM's Fisher Body Div., speculation over its destination was a hot topic here.

In the first place, Chrysler considered the Patton medium tank practically its own. Chrysler did much of the development work, made the pilot models, constructed a tailor-made tank plant at Newark, Del., and staged the official party when the tank was accepted by the Army. (THE IRON AGE, July 10, 1952, p. 111.) Ford, also an original manufacturer, was shunted out of the picture several months ago.

**Others Unhappy . . .** But when the bidding started, GM called in cost experts from all over its organization to Fisher Body's Grand Blanc, Mich., tank plant. Personnel from the Cadillac tank plant in Cleveland, for example, looked over the Grand Blanc plant, made recommendations. Result was a successful bid on GM's part.

L. L. Colbert, Chrysler president, made little attempt to conceal his disappointment on receiving the news.

"All I can say at the moment is that we worked very hard to get this business. Beyond that, the Secretary of the Army's statement seems to speak for itself," he said.

## V-8:

### New Chevrolet engine expected to make bow in '55.

Reports persist in Detroit that Chevrolet's V-8 engine may be closer to production than generally anticipated.

Among tooling sources it is said that a pilot line will be set up in the not-too-distant future. This, of course, doesn't mean that production is imminent, but the industry has gained a lot of experience in V-8 tooling in recent years and the time element is lessening.

**Automotive Production**
*(U. S. and Canada Combined)*

| WEEK ENDING | CARS | TRUCKS |
|---|---|---|
| Sept. 19, 1953.. | 122,283* | 24,334* |
| Sept. 12, 1953.. | 103,351 | 19,476 |
| Sept. 20, 1952.. | 115,590 | 32,158 |
| Sept. 13, 1952.. | 109,272 | 28,023 |

*Estimated Source: *Ward's Reports*

Even with work speeded up, however, there is little possibility of seeing the engine before 1955. There is little or no precedent for changing engine during a model year. Ford, for example, has had its engine ready for some time, but won't show it until new models are out.

### Expect Horsepower Squabble

In engine talk, however, the major point of interest is in the horsepower race that will be continued with upcoming models. One automaker has already promised 235 hp and may go higher with its top price model.

It seems almost inevitable that if one of the first cars to be introduced goes to 235 hp, this will be surpassed during the later introductions. The big squabble then will be charges and counter charges on how horsepower is measured and claims and counter claims on performance and economy.

## Olds Pushes Conventional Shift

It's still too early to forecast public reaction to Dynaflow-equipped Cadillacs and Oldsmobiles, although both are now in production.

It has been announced, however, that Olds will not try to regain full production with this offspring of necessity, presumably because Buick's Dynaflow production capacity is not sufficient for three divisions.

### Push Economy Model

Meanwhile, Olds is pushing a "thrift model" Deluxe 88 sedan in an attempt to promote sales of cars not equipped with an automatic transmission. This model will now get full attention while the Hydramatic transmission famine lasts.

**THE BULL OF THE WOODS** — By J. R. Williams

MUST OF BEEN HARD, A HEAVY CHEWER LIKE YOU TO QUIT AFTER ALL THOSE YEARS!
WELL, I KNEW I'D HAVE TO QUIT CHEWIN' TOBACCO WHEN I LEFT TH' SHOP, BUT IT WAS AN ORDEAL!
HIS BIG ORDEAL WAS THAT HE'D FORGET TO LEAVE TH' END STICK OUT-- HE STILL DON'T LEAVE MUCH OF IT OUT!
HE KEEPS LIGHTIN' MATCHES TO IT FOR LOOKS -- BUT SO MUCH OF IT'S A CHEW THAT A BLOW TORCH COULDN'T LIGHT IT!
THE BIG CHANGE
J.R.WILLIAMS 9-25
Copr. 1953 by NEA Service, Inc. T. M. Reg. U. S. Pat. Off.

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## The Kukri

## ...blade of the Gurkha Warrior

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### famous for their service to modern industry

Heppenstall Shear Knives are known throughout the Metalworking Industry for their dependable, low-cost performance. These are the blades that provide: *More cuts between grinds* • *More units per blade* • *Lower overall blade cost* • *Faster, more dependable production.* Make Heppenstall Shear Knives your standard specification.

**Heppenstall**—*the most dependable name in Shear Knives*

PITTSBURGH 1, PENNSYLVANIA

*Sales Offices and Distributors in principal cities*

# Ike to Bide Time On Replacing Durkin

**Union chief's ideas on Taft-Hartley could not be accepted . . . Job will stay open until things cool off . . . GOP now has working majority on FTC—By G. H. Baker.**

Barring a last-minute change in his Taft-Hartley strategy, President Eisenhower now intends to bide his time a bit before naming a new Secretary of Labor.

Exit of Martin Durkin from Ike's Cabinet is regarded as a mixed blessing by the White House inner circle. Mr. Eisenhower was sincerely sorry to lose the AFL plumbers' union chief. But it had become increasingly apparent that differences of opinion over Taft-Hartley revision were pretty well irreconcilable.

Mr. Durkin took the position that the Administration has promised revision of the Taft-Hartley act (Sen. Taft himself had for more than 2 years prior to his death urged a basic re-writing of the law) and he believed his obligation was to propose concrete changes.

**Differ with Durkin . . .** Management representatives agreed that changes were due, but differed widely with Durkin over their extent. On some points, such as proposed ending of the present ban on secondary boycotts, there apparently was no possibility of compromise. Durkin wanted to end the ban; management was equally insistent that it remain on the books.

Let the job lay fallow for a little while. That's the line of reasoning now being passed to Ike by his top advisors. It is pointed out that it would be folly for the President to name another union executive to the job at this time, as any such appointee would very likely feel compelled to follow Durkin's example.

**Political Risk . . .** Appointment of a business executive to the position would create an unnecessary political risk, for both the AFL and the CIO plan to hold important conventions in the next few weeks and union officials would doubtless have a field day of taking pot-shots at any candidate for the job that they did not regard as 100 pct acceptable to them.

Upshot is that Gov. Driscoll of New Jersey, David Cole, prominent labor mediator, and other citizens mentioned as possible candidates are "on ice" for the time being. Ike is to play his Taft-Hartley cards very close to his vest until the union convention hubbub has died down.

**Hold Edge on FTC . . .** Replacement of New Dealer Stephen J. Spingarn by former Republican Congressman John Gwynne this week at the Federal Trade Commission points to a definitely more favorable climate for business and industry in the field of trade regulations.

The White House now can count on a working majority of three Republican members of the FTC (Gwynne, Chairman Edward G. Howrey, Lowell Mason) to determine future government policies in such controversial areas as industrial pricing practices, minimum retail prices ("fair trade"), and manufacturers' quantity discounts.

**Freight Absorption . . .** Reaffirmation of the legality of individual delivered prices is expected from the new FTC majority. Congressional committees are expected to lose no time next January in pressing for enactment of bills authorizing the quotation of delivered prices by producers of steel, chemicals, cement, and other heavy industrial products subject to hefty shipping invoices.

The FTC is expected to tell Congress that it considers freight absorption entirely legal—so long as it is practiced on an individual company basis and not in collusion among a group of companies within any industry.

Chairman Howrey, a 50-year-old Virginia lawyer, represented a number of manufacturing firms in antitrust cases before the FTC and the Justice Dept. before President Eisenhower named him to his present position on Mar. 4, 1953.

**Debut on Oct. 1 . . .** Government advice to industry is now officially scheduled for distribution through the U. S. Commerce Dept.'s new Business and Defense Services Administration. Early this week, Secretary of Commerce Sinclair Weeks was planning to inaugurate the long-awaited new aid-to-business service on Oct. 1.

In all, about two dozen industry divisions are to be established in

## How Many Postmen?

**Federal civilian employment as of July was reported at 2,273,000, as compared with 2,415,000 a year previous. This looks like a reduction of 143,000.**

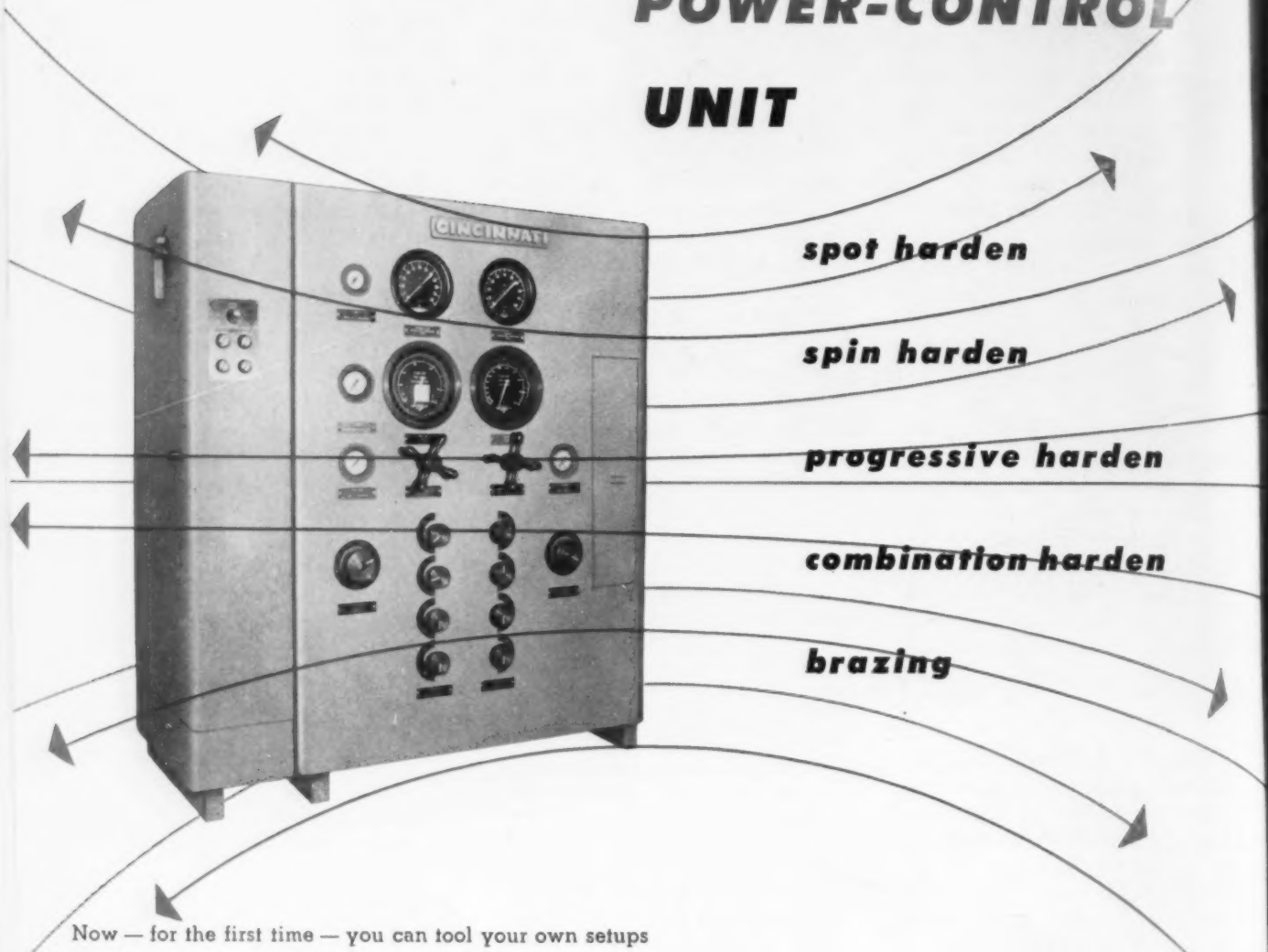
**Actually, a congressional committee finds, close to 19,000 of this reduction was a paper loss, pure and simple.**

**Reason is that the Post Office kept its personnel records in a "badly confused" manner, to use the mild phraseology of Deputy Postmaster General Charles Hook, Jr.**

**When the new Administration took over, Post Office employment was reported as standing at 520,803 as of last January. A revised system was instituted and when the smoke cleared away, the figure as of July 1 stood at 500,942. Difference between the two totals was mostly clerical error, said Mr. Hook, not reduction in force.**

*announcing a* ***NEW*** *concept in heat engineering*

# FLAMATIC POWER-CONTROL UNIT




Now — for the first time — you can tool your own setups for a wide variety of selective heating operations, hook them up to the Cincinnati Flamatic Power Control Unit, and then "call the shots." You can get high production of many parts . . . shift from one job to another without dis-mantling your tooling . . . rerun a job at any time and reproduce the original results. The Flamatic PC Unit provides control of (1) fuel gas and oxygen to burners, (2) water for quenching, (3) electrical power for automatic cycling. The cost is low; installation, operation, and maintenance are simple; results are uniformly dependable.

***see the new Flamatic power control unit in use at the metal show booth no. 1614***

**flamatic**

THE CINCINNATI MILLING MACHINE CO

Cincinnati 9, Ohio, U.S.A. • CINCINNATI

BDSA. In nearly all cases, these are to be headed by executives from business and industry.

**NPA Bows Out . . .** National Production Authority, as a result of the establishment of BDSA, is to be abolished. Its remaining functions (such as control of basic metals and of scarce materials) are to be transferred to the new agency.

BDSA is to be somewhat limited in its first months of operation by a relatively small budget. Appropriations by Congress for its functions total only $4.2 million—a figure considerably below the $10 million requested by Secretary Weeks and the $7 million later recommended by the Bureau of the Budget.

**Titanium Gets Hearing . . .** Possibility of developing Western Hemispheric sources for strategic materials, particularly titanium, was slated to be main topic at hearings held by a congressional subcommittee, scheduled to open at Seattle last Monday.

Sen. George W. Malone, R., Nev., said other meetings are contemplated, probably at Henderson, Nev., and San Francisco. Seattle hearing was scheduled to coincide with the convention of the American Mining Congress.

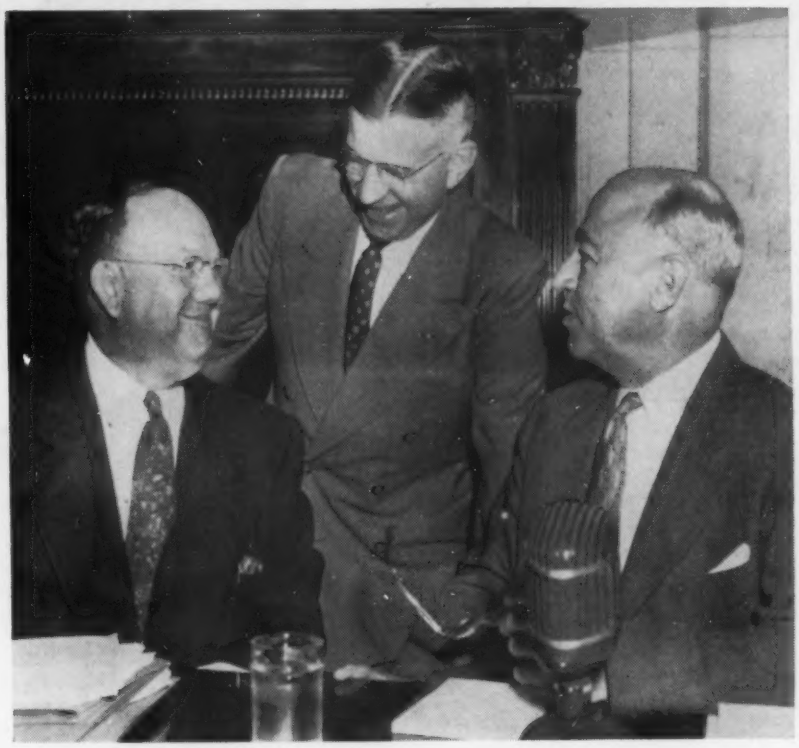
**Grain Storage Rush . . .** U. S. Agriculture Dept. officials say there has been a rush by commercial warehousemen to get in on the tax certificate program for building additional grain storage space under its occupancy guarantee program. (THE IRON AGE, Sept. 17, p. 101.)

At the same time, it is reported that storage bin purchases this year has now increased to a total of 16,520 units. Storage capacity has thus been increased from an earlier estimate of 90 million bushels to 96 million.

## Turn Down Freight Application

Commercial Barge Lines, Inc., of Detroit, has been turned down on a long-pending application to operate a general freight service along the Mississippi and Gulf shores.

Commercial is now authorized to transport new cars and trucks along the inland waterways. Interstate Commerce Commission says the firm failed to prove that additional general freight service is necessary.



WORLD TRADE is the concern of Sen. Capehart (left), Interior Secretary McKay (center), and Treasury Secretary Humphrey at start of Senate banking committee meeting and a 121-member advisory committee which will study how to stimulate world trade.

# Cutbacks:

### ODM sharpens shears for expansion target pruning soon.

Some new production capacity expansion goals "undoubtedly" will be set, even though federal policy now is to substantially reduce the total number, according to Defense Mobilizer Arthur S. Flemming.

As head of the Office of Defense Mobilization, Mr. Flemming has asked interested agencies to provide comments which will influence the retention or elimination of about 150 of the 233 goals set. He says this should not be interpreted to mean 150 will be dropped.

A "few weeks" will elapse before ODM is ready to announce its initial trimming action. The agency last week was waiting for response from Commerce and Interior Depts., which asked for additional time to prepare comments.

Mr. Flemming plans a continuing review of expansion goals, following a decision on the first pruning. He hopes to keep the goals under study, in order that production capacity in a given field may be expanded promptly to meet requirements not now foreseen.

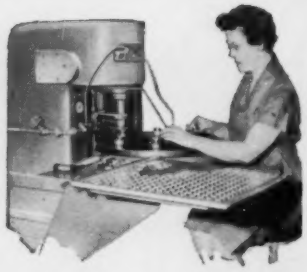
## No Third Round Answer Yet

Office of Defense Mobilization will not have a decision on the third round of aluminum production expansion before about Oct. 15.

At this time the number of companies which will participate is still undetermined. Olin Industries, Inc., East Alton, Ill., and the Wheland Co., Chattanooga, Tenn., are hopeful of becoming aluminum producers but both want federal "loan guarantees" before they go ahead.

Defense Mobilizer Arthur S. Flemming said the question of third-round expansion does not depend on the court decision involving the Aluminum Co. of America contract to buy 600,000 tons of Canadian aluminum.

**Assembly speed** is doubled using Multipress to crimp a small brass contact to pen-type flashlight cases.



**Scrap losses** drop sharply as Multipress doubles staking speed on high precision voting-machine counter wheel assembly.

**Output is boosted 100%** by famous toy train maker, staking a 6-part assembly together with Multipress.

# MULTIPRESS® DOUBLES PRODUCTION SPEED

## On Six More Typical Operations

*Faster production, better quality, less scrap, safer operation, easier handling, quieter action, and other profit-boosting results are run-of-mine with Multipress.*

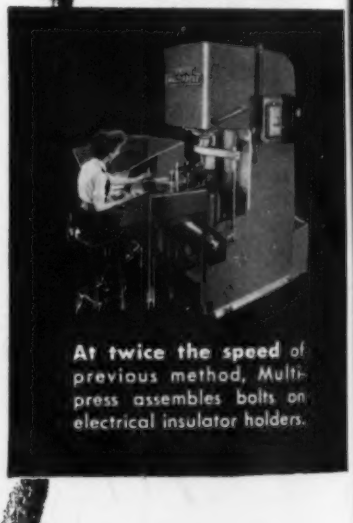
In the six cases shown here, Multipress *doubled* production rates. Hundreds of other reports tell of gains ranging up to 8 and 10 times the speed of previous equipment.

How does Multipress do it *so consistently?*

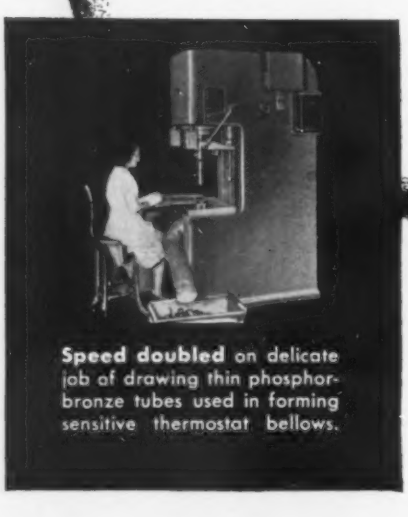
It is uniquely engineered to provide the smooth, controlled action of oil-hydraulic power *at its versatile best!* Infinitely adjustable ram pressures and stroke length make it easy to eliminate all unnecessary ram *travel* and ram *effort. Controlled* ram speed eliminates hammer-blow impact, cuts wear and tear on tooling, and permits better metal flow.

Multipress also offers standard attachments for extra efficiency on most production needs. It is easily equipped with automatic feeds, indexing tables, ejection devices, auxiliary ram actions . . . controls for automatic time-delay, hold-down, vibratory pressure application, sequence operations, etc. Multipress offers nine frame sizes . . . one-ton to 75-ton capacities. Write for details!

**In only four stages,** Multipress deep-draws a precision ordnance part formerly requiring 8 draws.



**At twice the speed** of previous method, Multipress assembles bolts on electrical insulator holders.



**Speed doubled** on delicate job of drawing thin phosphor-bronze tubes used in forming sensitive thermostat bellows.

DENISON HydrOILics

**The DENISON Engineering Co.**

**1158 Public Road, Columbus 16, Ohio**

# Yerington Copper Output Start Nears

**Anaconda to begin production at Nevada mine next month . . . Remove 10 million tons overburden . . . Ore estimated at 35 million tons plus sulfide deposit—*By T. M. Rohan.***

A major stride in boosting U. S. copper production 200,000 tons over 1951 levels gets started in Yerington, Nev., next month.

Anaconda starts production there Oct. 15 on its $38-million, 30,000-annual-ton unit in a record-breaking 16 months after starting work. Stripping of overburden ranging to 150 ft at a rate of 1 million tons per month has been underway for months. Ten million tons total will be removed over the orebody estimated at 35 million tons of 1 pct oxide ore. This is enough for 10 years' operation with an additional sulfide deposit underneath for future operations.

**How It Works** . . . For processing the low grade deposit, Anaconda is using the Dorr Co. fluosolids process. Low grade sulphur ore (25-30 pct) from Leviathan, Calif., is trucked in and burned. Resulting sulphur dioxide gas is put in contact with acid from a plant rated at 450 tons per day of 100 pct acid.

In Yerington a week ago, Clyde E. Weed, Anaconda Mining's vice-president in charge of operations, visited Weed Heights, housing project named for him to hold 230 families and 100 bachelors. This has transformed the farming and pick-and-shovel mining town of 1000 into a bustling metropolis. Mr. Weed said the fast mine start-up was an enviable record and accomplished entirely with Anaconda funds.

**Use Trucks Only** . . . The crater at Yerington will be almost 2 square miles in area and will use trucks exclusively along roadbeds which spiral along the sides. Each of the huge trucks in the fleet of 20 hauls 25 tons or 10 rail cars per fleet trip. They are supplied by 4 huge electric shovels, among the biggest in the business.

A stockpile of several months' supply of tin cans for leaching has been obtained through regular business channels from Bakersfield, Calif., Los Angeles and Houston despite earlier fears from the National Production Authority. About 16,000 tons is on hand with consumption set at 3000 to 3300 tons per month.

The Yerington project follows Anaconda's Butte, Mont., mine started some time ago and Kennecott's Ruth mine, also in Nevada. Biggest ones still to come from eight projects underway are Magma's San Manuel, Ariz., mine and Phelps Dodge's East Bisbee, Ariz., mine.

**Up Steel Output** . . . Western steel output climbed to 102.3 pct of rated capacity last week as mills boosted production on hot items to stockpile for approaching overhaul and maintenance. And a new price cut in the lowest U. S. scrap market is in the offing.

Three furnaces are down in the San Francisco area with another scheduled for this week. One Los Angeles plant is also on reduced capacity. Mills are keeping biggest production units at top output and starting overhaul on smaller ones. If demand drops continue, biggest mills may get long overdue maintenance

"Him and his economy. I introduce a bill for a new Boulder Dam and I get two beavers."

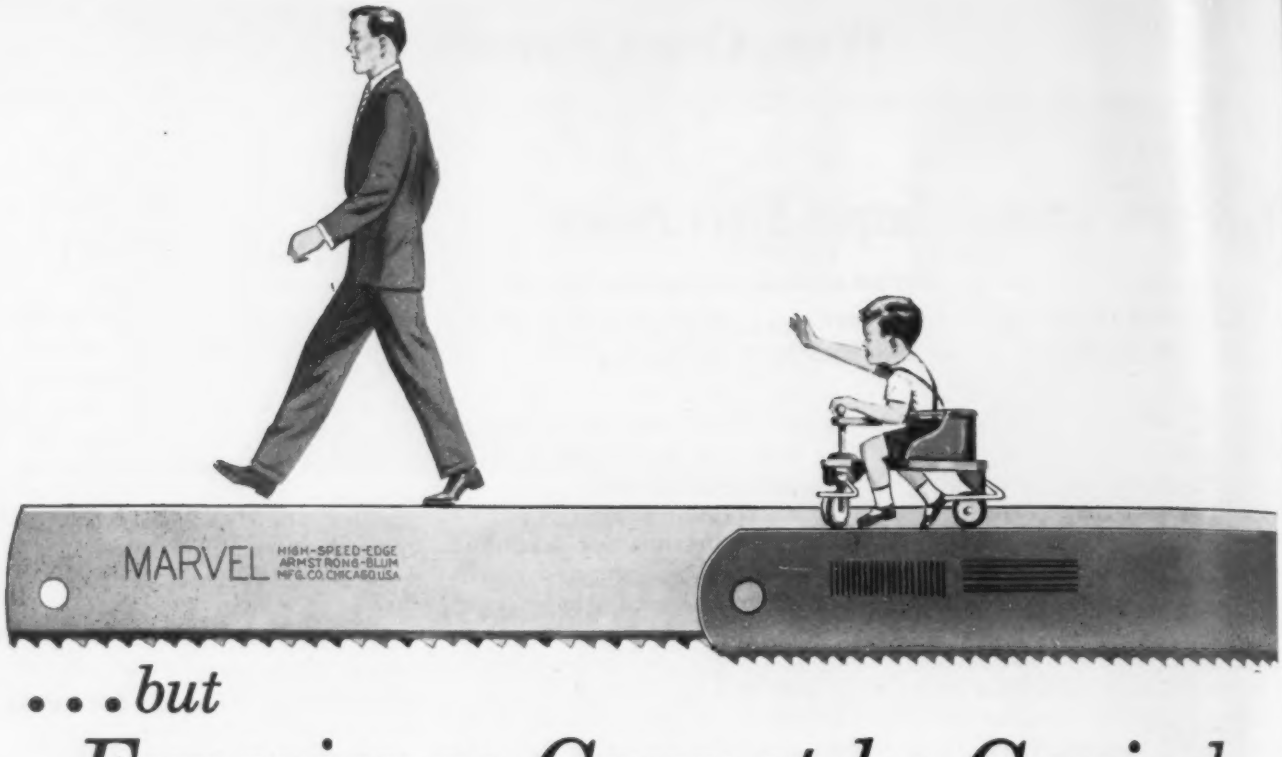
**Western Carrier Sunk** . . . West Coast shipyards' hopes to rebuild the third $212 million Forrestal class supercarrier ran aground.

Western representatives in Washington had united in pushing the Bremerton, Wash., navy yard for overflow repair business. Last week they were told by Navy Secretary Anderson the job would be done on the East Coast. Bremerton got the consolation prize of an estimated $40 million conversion of the Midway with possibility of later converting the Roosevelt and Coral Sea.

The Midway job will keep Bremerton at 15,000 employees through 1955. Rep. John F. Shelley, San Francisco, leading proponent for western shipbuilding, termed the eastern award "a serious blow."

**First Since 1929** . . . The West's biggest private yard, Bethlehem at San Francisco, meanwhile laid the keel for its third $9.4 million Mariner freighter. A recent contract from Pacific Far East Line, Inc., to buy the last three freighters from the U. S. Maritime Commission made it the first built on private contract on the West Coast since 1929.

Special adaptations such as rollback hatch covers replacing conventional lift type will boost costs slightly. Total cost to Pacific Far East will be between $15-$20 million although the Maritime Commission is paying about $9.4 million each under a traditional subsidy arrangement plus 10 pct.




. . . *but*

# *Experience Cannot be Copied*

More than a quarter-century ago MARVEL invented and basically patented the MARVEL High-Speed-Edge Hack Saw Blade—the UNBREAKABLE blade that increased hack sawing efficiency many-fold.

Every MARVEL Hack Saw Blade ever sold has been of that basic welded high-speed-edge construction, with constant improvements from year to year, as EXPERIENCE augmented the "know-how" . . .

MARVEL is not "tied" to any single source of steel supply, and has always used the best high speed steels that became available from time to time as metallurgy progressed. When-as-and-if finer steels are developed—and are proven commercially practical for welded-edge hack saw blades—MARVEL will use them, regardless of cost or source . . .

There is only one genuine MARVEL High-Speed-Edge! All other "composite" or "welded-edge" hack saw blades are merely flattering attempts to imitate — without the "know-how" of MARVEL EXPERIENCE . . .

Insist upon *genuine* MARVEL High-Speed-Edge when buying hack saw blades—and be SAFE, for you can depend upon MARVEL. They have been "tested", "pre-tested", and "re-tested" by thousands of users for more than a quarter-century!

MARVEL *Metal Cutting* SAWS

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# European Builders See Market Growing

**Replacement demand, increased industrialization expected to strengthen machine tool market . . . New orders top shipments . . . Barter trade up—By *E. C. Beaudet.***

European sources report a general tone of optimism was evident at the third European Machine Tool Exhibition held earlier this month at Brussels, Belgium, where nearly 800 European machinery manufacturers displayed their latest models.

Cause of the industry's optimism is the fact that new orders are beginning to run ahead of shipments for the first time since the fall of 1951. And builders expect this trend to continue.

**Increase Demand** . . . Europe's continued drive for increased industrialization is one factor that will warm up machine tool demand. Another is the attempt by European hard goods manufacturers to boost exports.

In their attempt to compete for more markets, foreign producers will be hampered by the overabundance of obsolete machine tools in European plants. Builders realize this and are certain the result will be increased demand for the new, improved models featured at recent machine tool show.

**Not Fully Recovered** . . . Equipment losses suffered by European plants during the war have been made up only partially, in many cases with second-hand tools. And plant rehabilitation has not been as extensive as is generally believed in the U. S.

Some countries such as Sweden and Switzerland have made considerable progress toward industrial recovery, but other nations harder hit by the war have a more difficult problem.

That tool replacements are vital if Europe is to produce efficiently is evident from figures showing the high percentage of obsolete machinery in European plants.

**Pattern Changes** . . . Recently there has been a change in the European machine tool export pattern. In 1950-51 the builders were doing considerable business with the dollar and sterling areas, but last year this changed.

Bilateral trade agreements set up among various governments caused more machine tools to be exported on a controlled program, payment being made in raw materials, food, or other commodities. In many instances this payment by exchange of materials rather than cash makes things difficult.

Oftentimes these "forced imports," which must be taken by terms of the trade agreement, could have been obtained elsewhere at lower prices. In other cases the forced imports are in excess of actual needs, in which case the surplus must be disposed of, not always easily or at a profit.

**More by Barter** . . . Spain presents an example of the trend toward an increase in controlled trade since its machine tool needs are filled under trade agreements specifying the maximum amount of equipment which can be imported from other nations in Europe.

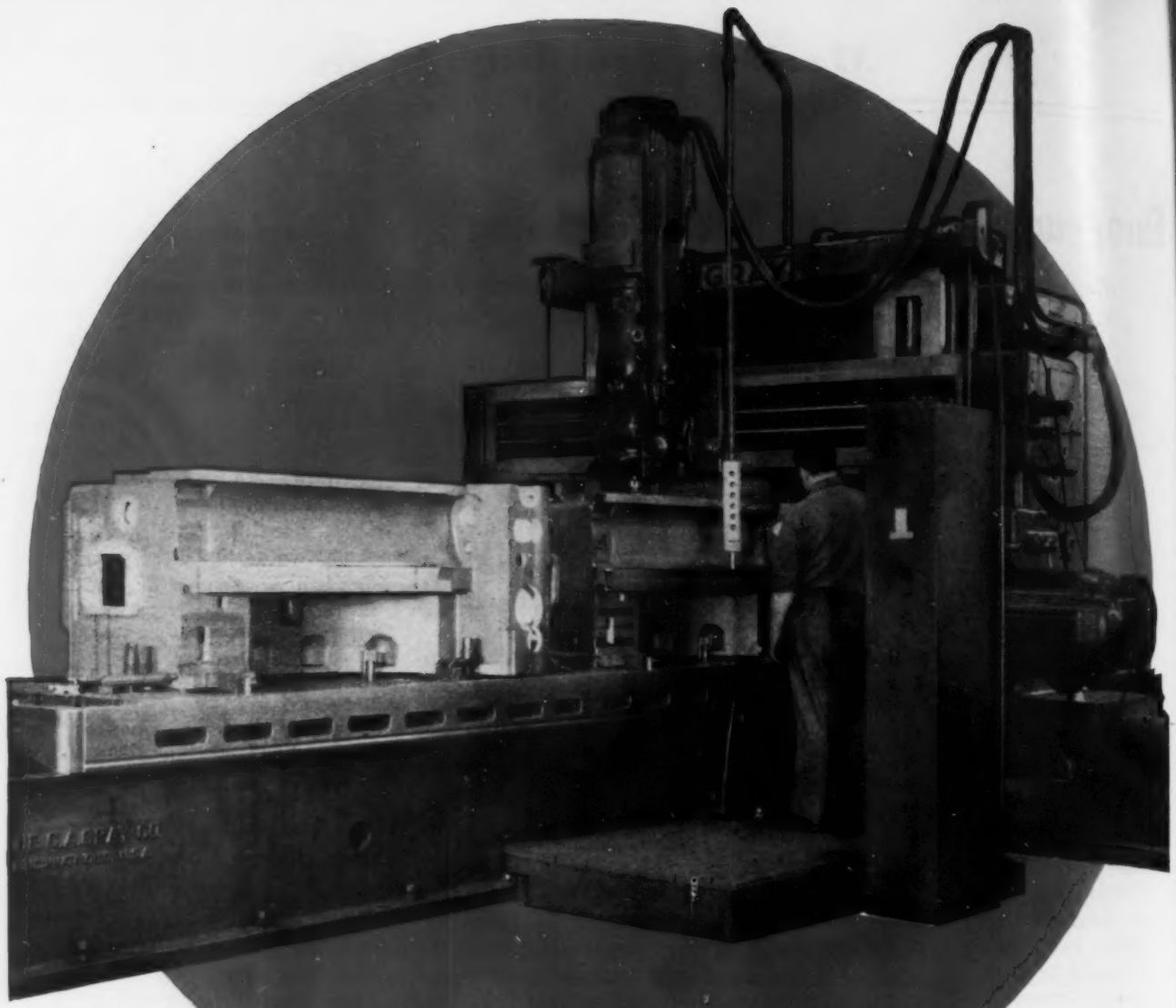
In 1952 Spain imported from Germany tools worth $2.7 millions ($1.2 millions in 1951); from Great Britain $2.3 millions ($1.7 millions in 1951). In the same pattern Spain's tool imports by agreement from Switzerland, Italy and Sweden in 1952 were 60, 30, and 25 pct higher than they were in 1951.

**Inspect Packages** . . . Defense Dept. and Office of Defense Mobilization strongly favor periodic inspection and evaluation of "packages" of machine tools, held in readiness for use at emergency times, to insure that the components actually will meet changing production needs.

This attitude was emphasized last week by Defense Mobilizer Arthur S. Flemming, who said Defense Under Secretary Roger Kyes is concerning himself with the question of keeping tool stocks up to date. Mr. Flemming also observed that tool packages should be kept intact to make certain the equipment can be put to work speedily whenever it may be needed.

## How Up to Date Are Europe's Machine Tools?

| | Pct Under 10 years | Pct 10-15 years | Pct 15-20 years | Pct Over 20 years |
|---|---|---|---|---|
| Switzerland | 44 | 17 | 35 | 4 |
| Finland | 38 | 34 | 17 | 11 |
| Spain | 21 | 23 | 26 | 30 |
| Italy | 39 | 32 | 24 | 5 |
| Germany | 28 | 33 | 29 | 10 |
| Belgium/Luxembourg | 33 | 19 | 38 | 10 |
| France | 32 | 18 | 41 | 9 |
| Holland | 36 | 31 | 11 | 22 |
| Denmark | 28 | 41 | 24 | 7 |
| Gr. Britain | 28 | 26 | 35 | 11 |



# *Fellows* is known by the company it keeps

The Fellows Gear Shaper Co., Springfield, Vt. is universally known for building top quality products . . . using advanced methods and the most modern equipment. Fellows' modern machinery includes this new GRAY 48" x 48" x 16' Milling Machine, which is ideally suited to their fast, high production requirements. GRAY's modern speeds are demonstrating in hundreds of shops, that jobs don't grow old on a GRAY!

**GRAY self-contained Unit Heads permit high horsepower cuts with speeds from 10 to 1000 instantly available by the flick of a lever.**
**Large facing cutters and small end mills can be run simultaneously at efficient speeds and at high feeds on a GRAY.**

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# REPORT TO MANAGEMENT...

**Adjustment period is here now**

You are both actor and audience as the curtain rises on the Great Transition--a much heralded economic drama concerning industry's adjustment to less boom, a more normal but still vital prosperity. Continuing press notices of waning demand and output of major industries will tell you America's expanded productive plant is more decisively passing or catching up with consumption and demand. In 1954 this will cause no awkward dislocation but meanwhile some of the boom's momentum is surely dissipating. Enormous leeway will nevertheless remain for solidly anchored prosperity.

**Fast finish on last lap**

By scanning current statistics of production, consumption, you can conclude that the turning point to adjustment is now here. No doubt this year and this quarter will surpass records. Such active forces as peak employment, spending, capital investment by industry are booting 1953 to a fast finish and will start 1954 at a gallop, keep it running sure-footedly.

**Where strength springs from**

Much economic potency derives from consumer income of $288 million in August, against $286.3 million in July and only $271.3 in August '52. Meanwhile, employment stands at a record 63.4 million. Federal Reserve Board's production index rose to 238 in August, recovering from its July sag. For August '52 the index was 215. Large segments of the economy, although predicting moderate declines, will carry through 1954 substantially unchanged. Backbone industries such as autos, appliances will see demand contract but only to the degree that their market gravitates to normal. Some depressed industries such as farm equipment may on the other hand recover.

**Production catches demand**

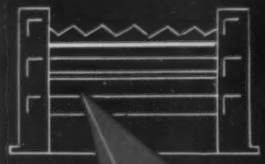
This week National Conference Board reports three out of four companies surveyed indicate capacity and demand for major product lines are mainly in balance. Many claim surplus capacity now. Capital spending next year will be decreased by 46 pct of companies interviewed. This does not mean that spending on capital goods will be blighted in '54. It will no doubt turn down from the 1953 summit of $27.8 billion but industry modernization must remain at a high water mark for competitive reasons.

**Why transition is emerging**

That the period of economic adjustment is emerging can be shown by inventory pruning and declines in new and unfilled orders. Industry is jockeying to fall into step with prospective demand. Manufacturing inventories in August rose to $45.7 billion from $45.5 billion in July. Upward pressure stemmed mainly from high sales. Significantly, finished goods inventories are tending to rise proportionately higher than raw materials, contrary to last year's pattern. Although finished goods stocks are not regarded as excessive when sales are considered, they furnish clear evidence that the boom has been bled of its upward drive. The economy is, however, beginning to take root on a high plateau.

**More adjustment signposts**

July's new order rate outstripped July '52 but when seasonally adjusted was below June '53. Unfilled orders slid $400 million in July. August housing starts were 2000 under the 96,000 of July, though 1953's 8-month total approximately equals 1952. Department stores are beginning to report lighter retail counter activity--however trifling the decline. Reynolds Metals Co. last week conceded its aluminum salesmen next year must get out and sell. It seems demand will withdraw somewhat. August cash dividend payments faltered, were the sparsest this year. Manufacturing contributed all the drop, falling 17 pct.



# ELECTRIC FURNACE STEELS

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## *use an APEX extension . . . with APEX power bits*

Apex extensions provide the extra length that makes it easy to drive screws in hard-to-reach places.

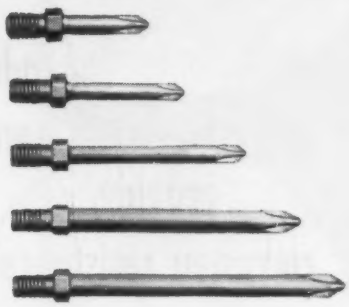
You can use them on any air, electric or spiral driver that accommodates ¼"-24 screw shank.

You can use them with any Apex ¼"-24 power bit or bit holder and insert bits.

You can use them in driving Phillips, Frearson (Reed & Prince), Slotted, Clutch Head, Socket Head (Allen type) or Hex Head screws.

In short, you can get the answer to just about any screwdriving problem from Apex. Write, on your company letterhead please, for your copy of our new Catalog 21 — the authority on screwdriving.

**to drive PHILLIPS or FREARSON screws**

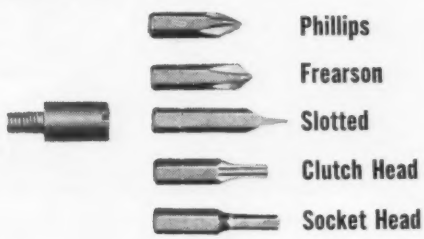


**to drive SLOTTED screws**

**to drive CLUTCH HEAD screws**

**to drive HEX HEAD screws**

**...with APEX bit holder and insert bits**

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## —Free Publications—

*Continued*

### Steel shot

Features of Wheelabrator steel shot are outlined in a new folder which states that Wheelabrator shot will cut abrasive consumption, lower cleaning costs, lengthen parts life, reduce maintenance labor and cut shipping, handling and storage costs. Also outlined briefly are the 19 control checks which the company uses to make certain that its shot is of the highest quality. *American Wheelabrator & Equipment Corp.*

**For free copy circle No. 11 on postcard, p. 93.**

### Metalworking

Latest issue of Vanadium Corp. of America's *Vancoram Review* contains an extremely interesting article on the history and metallurgy of the famous Damascus Sword. In addition the publication contains technical articles on granial and its uses, stainless steel kettles, items on the latest developments in the metals industry, and abstracts from technical papers. *Vanadium Corp. of America.*

**For free copy circle No. 12 on postcard, p. 93.**

### Grinders

Van Norman's 418 cylindrical grinder is especially designed to provide fast, economical, close-tolerance short runs or production grindings of small parts in toolrooms, job shops or plants where work is usually in small or medium runs. In a new bulletin, the operating advantages of the grinder are discussed, and there are also complete specifications and a floor plan. *Van Norman Co.*

**For free copy circle No. 13 on postcard, p. 93.**

### Chrome carbide

A technical report on Carboloy grade 608 cemented chrome carbide, a comparatively new powdered metal that is highly resistant to corrosion and erosion, has been issued by General Electric's Carboloy Dept. Included are data on composition, manufacture, physical properties, application suggestions, finishing techniques, methods of attachment. *Carboloy Dept., General Electric Co.*

**For free copy circle No. 14 on postcard, p. 93.**

# Weirzin

ELECTROLYTIC ZINC-COATED STRIP

## Cuts manufacturing costs!

- **Speeds production**
- **Increases die life**
- **Reduces die maintenance**

**From the first day you use Weirzin you will find a marked reduction in manufacturing costs. Your production rate will increase with less time spent on die maintenance and replacement. The tight zinc-coating, electrolytically applied to Weirzin steel, actually lubricates dies without leaving a zinc deposit—thereby reducing die maintenance expense and lengthening die life.**

**One fabricator reported a 300 per cent increase in production per set of dies after changing to Weirzin from ordinary carbon steel. This is an economy factor too great to be ignored.**

**Add to this the fact that the zinc coating on Weirzin will not flake, peel or powder under the most severe fabricating operations and you will quickly realize what production economies Weirzin has to offer. Write today for further information on how Weirzin can cut your manufacturing costs—and make your product a better one.**

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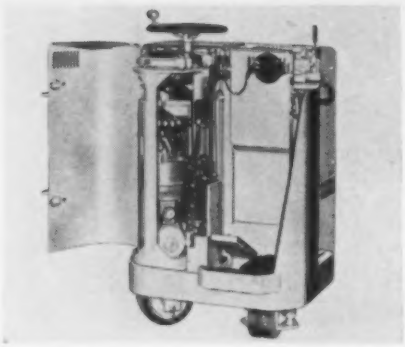
# NEW EQUIPMENT

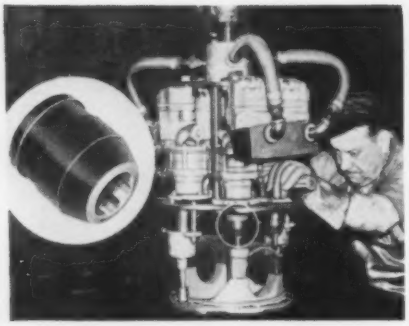
**New and improved production ideas, equipment services and methods described here offer production economies . . . just fill in and mail the postcard on page 89 or 90.**



## Power unit built for quick servicing

Servicing has been made easier by a new power unit which opens like a book. All moving parts of the unit are housed behind double hinged doors. Except for the wheels, there is nothing to inspect or service under the unit. The complete turret assembly can be changed in 30 min. All brushes on the unit are visible for fast inspection and replacement. Control switches, contactors and lubricating points are also located for quick servicing. The steering wheel and controls operate entirely within its confines, so that no part of the operator's body need be outside the unit. The travel switch affords three speeds in both directions. *Raymond Corp.*

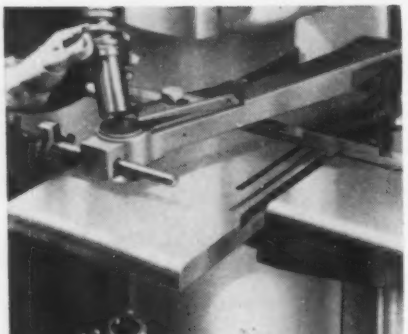
**For more data circle No. 15 on postcard, p. 89.**



## Socket permits positive contact while turning

New type hexagonal nut socket permits the nut running tool to positively engage the nut while turning. Designed for use on air or electric powered drive tools, the socket is suited for multiple nut running in mass production applications, such as automobile wheel assembly. The surface drive unit can be applied at a slight angle so nuts can be run close to obstructions. The socket is manufactured from alloy steel and heat treated to provide maximum wear resistance and long life. It is available in drive sizes ½ and ⅝ in. *Cornwell Quality Tools Co.*

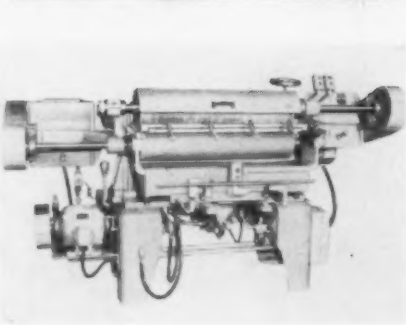
**For more data circle No. 16 on postcard, p. 89.**



## Punching, notching and nibbling sheet metal

With an improved Hydr-New-Matic head the Wales Model 10-AA sheet metal fabricator operates with a minimum of vibration and noise at 165 strokes per minute for single hole punching and for nibbling. Rapid interchangeability for punching, notching and nibbling is a feature of the fabricator. Operators work from blueprints or operation sheets without requiring templates. The 1¼ in. holder (illustrated) for the Wales Quick Change System permits 10-sec changing of punches and dies for punching various round and shaped holes up to 1¼ in. diam. The die is simply pushed down through holder base and punch assembly lifted from top of holder. *Wales-Strippit Corp.*

**For more data circle No. 17 on postcard, p. 89.**



## Surfacing machine finishes to any degree

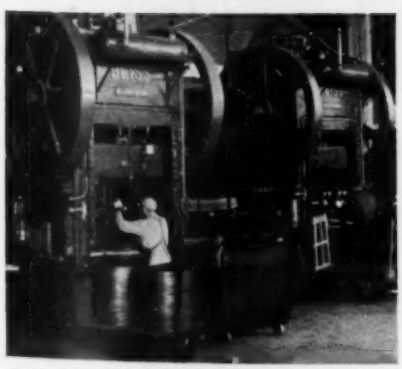
Any degree of finish, from flash removal to mirror finish, can be obtained with a double-roll surface finishing machine. It has two-directional, electro-hydraulic feed mechanism featuring straightline actuation which is said to eliminate all rapidly wearing parts. Its totally-enclosed hydraulic circuits and sealed friction bearings are not vulnerable to abrasives. An enclosed compressed-air circuit opens and closes the rolls for unloading. It also provides an automatic float for the rolls on contoured work. Rolls are 40 in. wide. *Clair Mfg. Co.*

**For more data circle No. 18 on postcard, p. 89.**

*Turn to Page 96*

# Punching 7,000 holes in 90 seconds with the BLISS perforating press!

## Each hole precisely located and burr-free on wrap-around stamping for Lovell dryer



**TWO NEW BLISS S-2 PRESSES** team up at Lovell. Each has 175 tons capacity. At left: forming a dryer inner drum head. At right: piercing a cylindrical exhaust duct.

Take a sheet of 0.037 steel, 19″ x 77″, then pierce out 67% of the area with 7,000 precise perforations. And do it continuously day in and day out at the rate of one every 90 seconds. That's how Lovell Manufacturing Co., Erie, Pa., produces its dryer wrap-around stamping with a Bliss No. 875 High Speed Perforating press. Average speed is 160 strokes per minute with a 64 punch tool.

Press accuracy and rigidity are extremely important to insure exact alignment of the comparatively fragile punches. A specially-designed Bliss feeding mechanism, built-in safety devices and accurate back gages guard against miscuts.

But dependable press performance is not unusual at Lovell. For Bliss presses have been their first choice since 1918. Today, 66% of Lovell's stamping equipment is Bliss-Built. As Tool Superintendent Raymond F. Neider points out, "Our Bliss presses have stood up well under steady operation—often through double shifts. They are rugged, yet easy to operate and maintain. But then they have to be good or we couldn't depend on them as we do."

Next time you have a pressed metal problem, ask Bliss to specify the *right* press for *your* operation. They did it for Lovell and thousands of others.

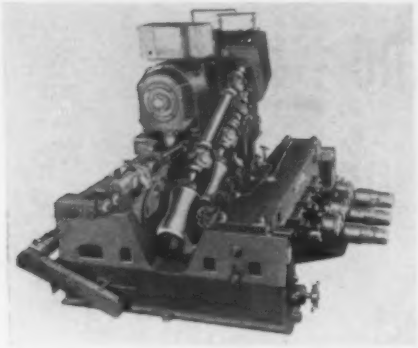
**BLISS** on your press is more than a name... it's a *guarantee*

**E. W. BLISS COMPANY, Canton, Ohio**

**PRESSES, ROLLING MILLS, SPECIAL MACHINERY**

E. W. Bliss (England) Ltd., Derby, England • E. W. Bliss Company (Paris), St. Ouen sur Seine, France

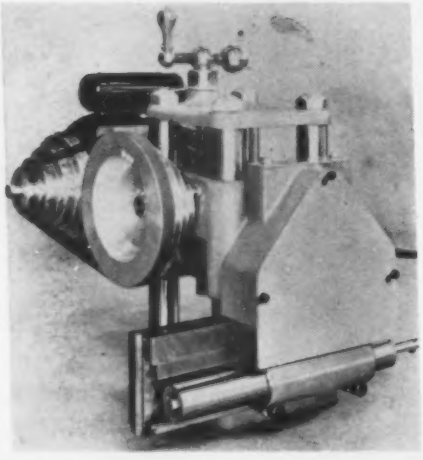
*U. S. Plants* in Canton, Salem and Toledo, Ohio; and Hastings, Michigan. *Branch Offices* in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. *West Coast Representatives:* Moore Machinery Co., Los Angeles and San Francisco; Star Machinery Company, Seattle. *Other representatives throughout the world.*



## Straightener is adaptable for tubing

A heavy-duty straightening machine designed for hot-rolled bars is equally adaptable for steel and nonferrous tubes and round bars such as heavy-walled seamless tubing or alloy heat-treated hot-rolled bars. Tubes from 1 to 10-in. OD and bars from 1 to 6½ in. diam can be straightened at speeds up to 320 fpm with good results. Any 4:1 ratio as 50 to 200 or 80 to 320 fpm can be furnished depending on application requirements. The machine employs the 5-roll principle in which a central roll is between two sets of opposed rolls, each having a driven and idler roll. The straightening load is distributed over three points, for good end-to-end results. *Sutton Engineering Co.*

**For more data circle No. 19 on postcard, p. 89.**



## Keyseater adds reciprocating action

A portable keyseater, which can be set on a lathe carriage, will cut internal keyways from ⅛ to 1 in. in width in bores from ½ in. to any required size. It is also used as a portable slotter or shaper, and as a bench shaper. Operation is normally as a draw shaper but a flip of the switch and a change of the tool holder adapts it for push shaping. Stroke is adjustable from 0 to 5 in. and angle up to a full 360°. An oil reservoir provides automatic lubrication to all moving surfaces. Rigidity and close fits help to keep tolerances in width within 0.001 in. The rocker arm and all tool holders are of hardened steel. The bronze ram, slide ways and gib are hand scraped for accurate fit. It will make keyways 4½ in. long in SAE 1020 steel using a ½ in. wide cutter bit and averaging 0.007 in. per stroke. Wider cuts are made by moving the tool or changing to wider tool bits after making the ½-in. cut. *Versa Mil Co.*

**For more data circle No. 20 on postcard, p. 89.**

MAY-FRAN

AUTOMATIC SCRAP REMOVAL
PAYS OFF!

**CHIP-TOTE . . . eliminates machine down-time at THOMPSON PRODUCTS, INC.**

Machines produce more when **MAY-FRAN CHIP-TOTES** permit continuous operation. **CHIP-TOTE** automatic scrap conveyors remove borings, turnings and chips from high-production machine tools while they are operating . . . thus eliminating shut-down for manual scrap removal.

At Thompson Products, Inc., Cleveland Plant, **CHIP-TOTES** speed production by continuously conveying the large volume of chips generated by Sundstrand automatic lathes from machine to tote boxes. Operating speed of the **CHIP-TOTES** is synchronized with metal removing capacity of lathes to assure steady jam-free flow of scrap. In addition, the **CHIP-TOTES** provide for drainage and return of coolant.

MAY-FRAN
ENGINEERING, INCORPORATED
1698 CLARKSTONE ROAD • CLEVELAND 12, OHIO

## Hardness testers with automatic load changing

New hand-operated metal hardness testers provide automatic load changing and magnified optical readings. The instruments are the Galileo superficial hardness tester providing loads starting at 5 kgm, and the Galileo standard hardness tester which handles Rockwell measurements from 30 to 1000 Brinell units, Brinell tests, special loads and Vickers measurements. Automatic changing of loads is done quickly and simply by turning a dial which immediately switches the loads in the interior of the instrument. The projection of highly magnified scales onto a screen at the top of the instrument makes the ball and diamond Rockwell scales highly visible and easy to read. Brinell numbers can be obtained quickly and easily. Instruments are supplied with a variety of anvils and steel ball penetrators, with the diamond cone penetrator provided as an accessory. *Opplem Co., Inc.*

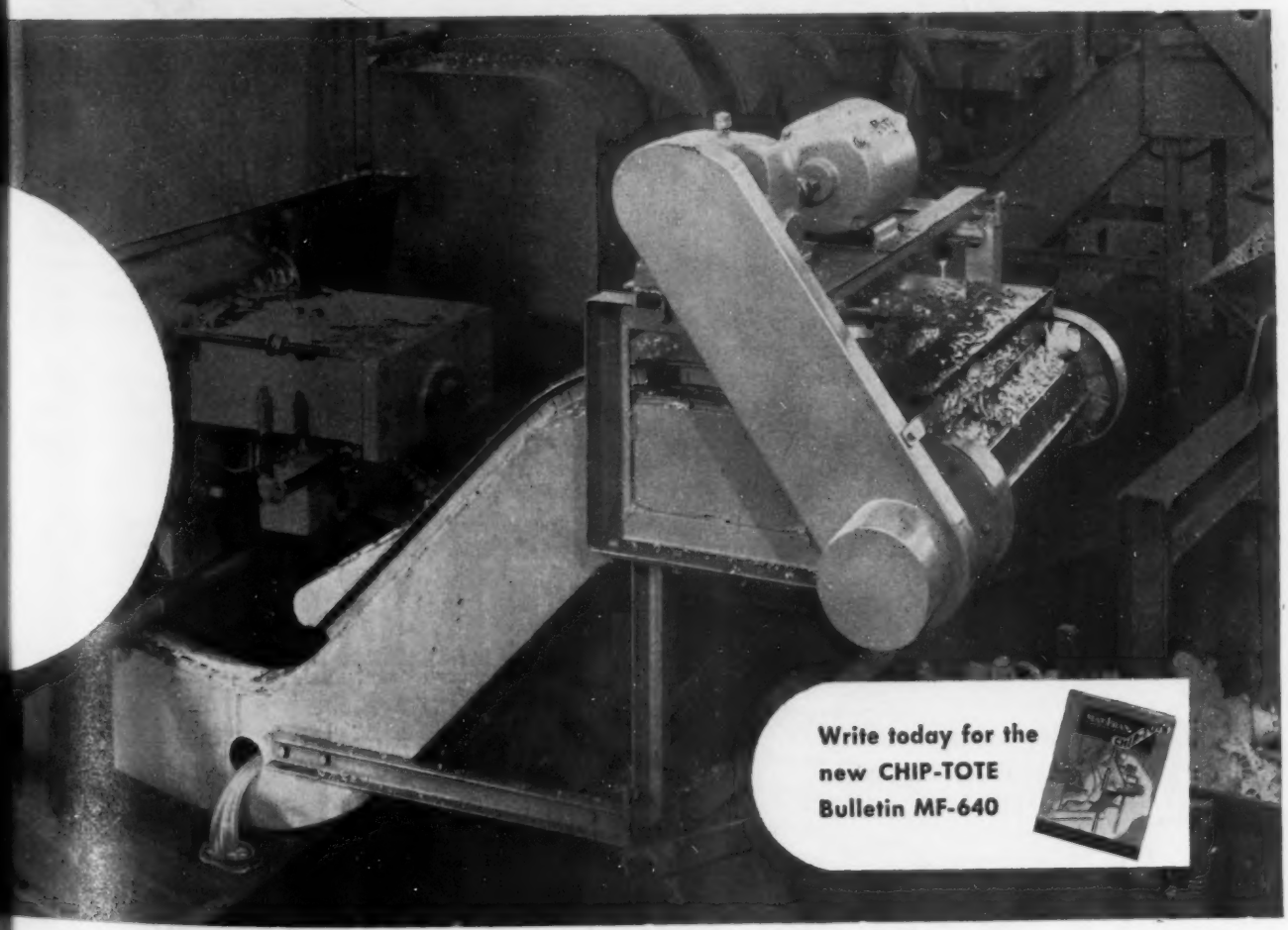
**For more data circle No. 21 on postcard, p. 89.**

## Attachment for lathes duplicates parts

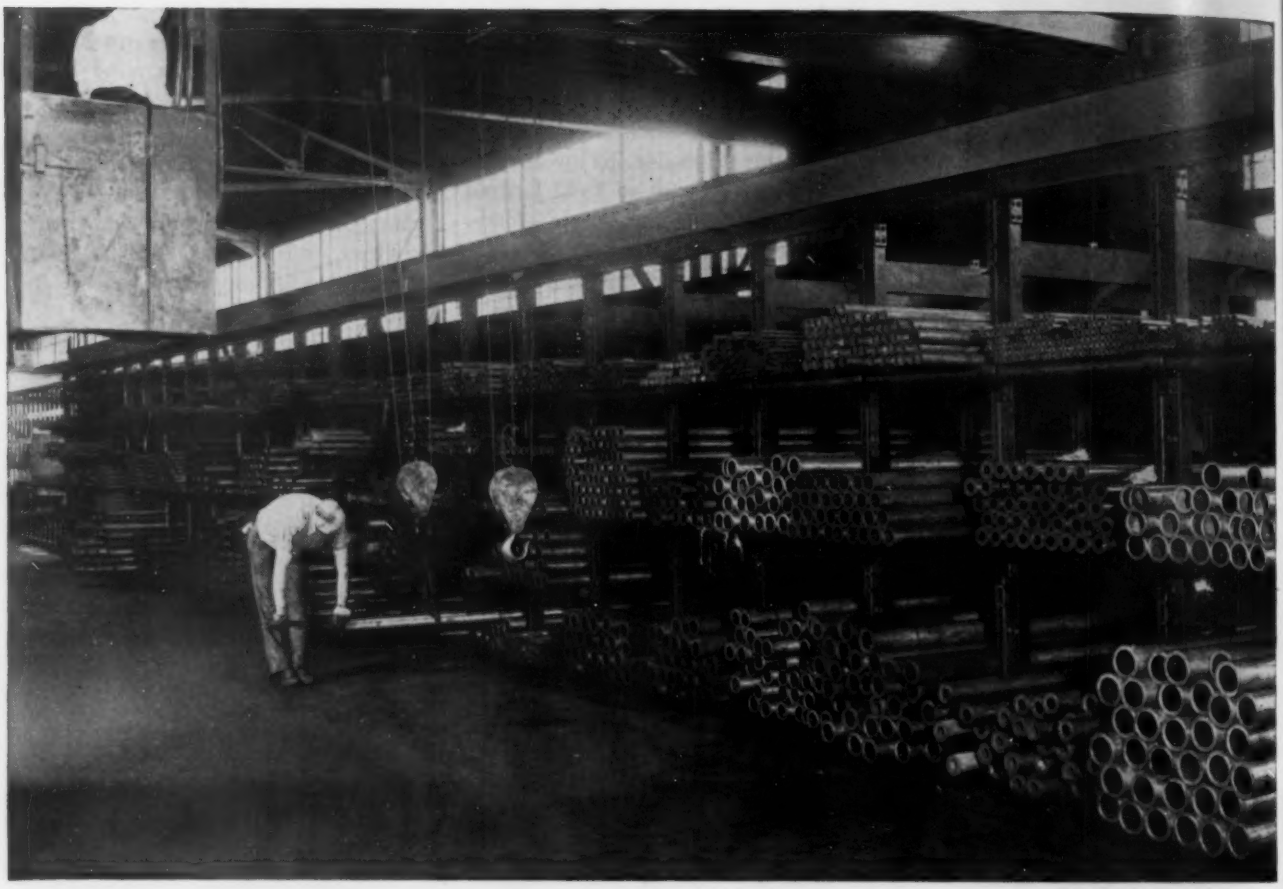
The Bondycop hydraulic copying attachment for lathes is available in two sizes: 3¼ in. for lathes from 10 to 13 in. swing and 6 in. for lathes with 14 to 20-in. swing. The unit is used for duplicating parts and has the advantage of copying any angle up to 90°, straight or irregular contours; permits internal and external copying through the use of templates and does not interfere with output of the lathe when the attachment is not in use. The standard size Bondycop can be used for all variations of diameters up to 6-in. with work 16 to 100 in. long between centers. *Morey Machinery Co., Inc.*

**For more data circle No. 22 on postcard, p. 89.**

***Turn to Page 102***



# Need 52100 tubing for rush hollow parts jobs? *Order today—we'll ship tomorrow!*



ORDER 52100 tubing today—we'll ship it tomorrow from our mill stock of one hundred and one sizes!

A high-carbon chrome steel manufactured by the Timken Company, 52100 is a through-hardening steel in moderate sections and can often be used in place of more expensive steels. It can be heat-treated to file hardness and tempered back to any desired point.

52100 is available in sizes from 1″ to 10½″ O.D. for hollow parts jobs like these: aircraft parts, ball bearing races, pump parts and plungers, collets, bushings, spindles, grinding machine parts and precision instrument parts.

As America's pioneer producer of 52100 tubing, the Timken Company has unequalled experience resulting in uniform high quality from tube to tube and order to order. Rigid quality control checks every step of production.

For immediate delivery of your less-than-mill-quantity orders, write, wire or call The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

# Intricate Castings Like this call for Neville Pig Iron

TRACTOR transmission castings like the one shown above have to stand up to years of rugged service. That's why the Lynchburg Foundry Company, Lynchburg, Va., insists upon malleable pig iron that meets rigid specifications for uniform composition and high quality. To meet these requirements, Lynchburg uses *Neville* Pig Iron to cast transmission cases, flywheels, crankcases, oil pans, brake drums and other cast products. ● If your casting requirements are strict, it will pay you to specify *Neville* Pig Iron. Write, wire or phone for more facts today.

**NEVILLE**

Quality Pig Iron for the Foundry Trade

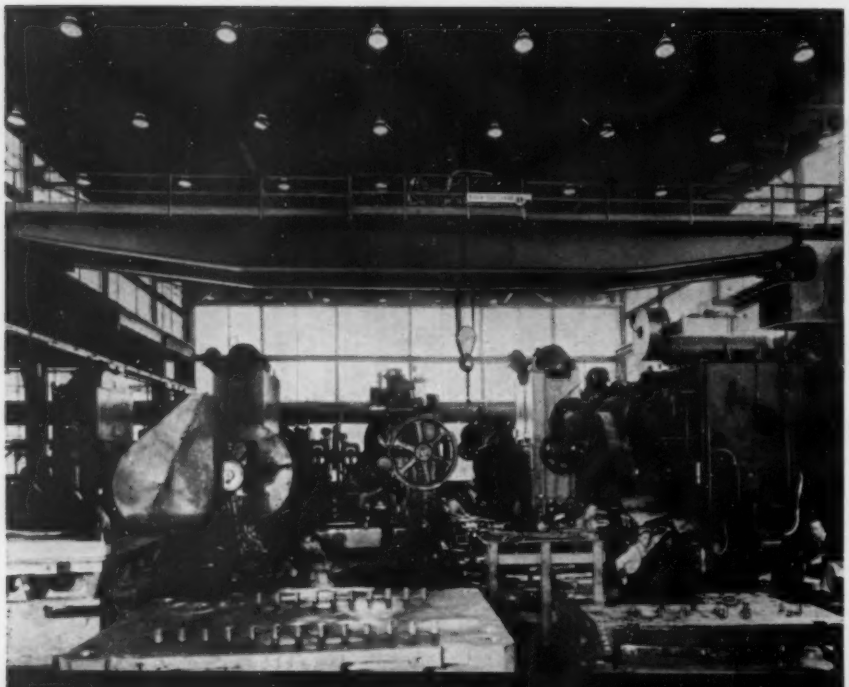
W&D 4868

PIG IRON DIVISION

**PITTSBURGH COKE & CHEMICAL CO.**

Grant Building • Pittsburgh 19, Pa.

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON



For DEPENDABLE Service
Specify a "Shaw-Box" Crane

**300-TON GIANT** or 500 lb. crane — Shaw-Box builds all capacities for every need. Power stations, railroad shops, steel mills and industrial plants of every description rely on the dependable service that has distinguished "Shaw-Box" Cranes for generations.

**MULTI-MOTORED CRANES** were introduced by Shaw-Box in 1888. For more than 65 years, our entire facilities have been devoted *exclusively* to the development and production of load-handling equipment. When you buy a "Shaw-Box" Crane today, you can select from the greatest variety of standard types available anywhere.

**MANY FEATURES ORIGINATED** by Shaw-Box have become standard in crane manufacture everywhere. For enduring stamina . . . for complete safety for man, load and crane . . . for unmatched load-handling economy and maintenance convenience — you can make no better choice than a dependable "Shaw-Box" Crane.

**PLAN YOUR REQUIREMENTS** for today and years to come. We will gladly cooperate with your engineering consultants or your own staff. Or write for Catalog 219 showing "Shaw-Box" Full Electric Traveling Cranes from 5 tons up; Catalog 218 for 'Load Lifter' Cranes from 1 to 20 tons; or Catalog 221 for Series "D" All-Electric 'Load Lifter' Cranes from 1 to 20 tons.

"Shaw-Box"® CRANES

MANNING, MAXWELL & MOORE, INC. Muskegon, Michigan

Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, and 'American' Industrial Instruments.

## —New Equipment—

*Continued*

### Press brake

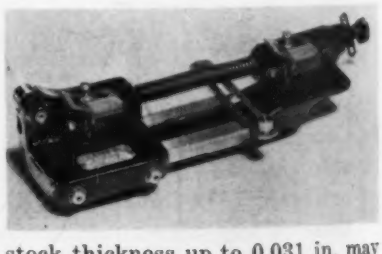
Many functional features are incorporated in a press brake built in 6 and 8-ft sizes. Its sturdy welded frame is normalized, then machined in one piece for accuracy. The alloy steel eccentric crankshaft is of one-piece forged construction. The cast steel flywheel is perfectly balanced.

Alloy steel adjusting screws with buttress thread and revolving bronze nuts are of jam-free design. The ram can be adjusted accurately, each turn of a handle providing 0.125 in. adjustment. The flywheel runs on ball bearings. *Service Machine Co.*

**For more data circle No. 23 on postcard, p. 89.**

### Hitch feed

Increased feed lengths and a heavy, semi-steel main frame and moving member are features of a new hitch feed. Its design retains the positive and accurate gripper plate principle. Lengths up to 2½ in. and

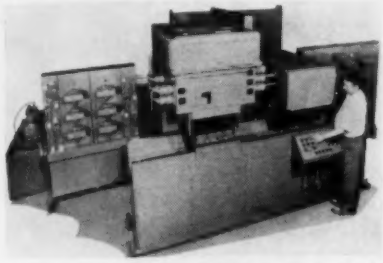


stock thickness up to 0.031 in. may be fed. Insertion or removal of stock is done instantly and without tools. The feed may be mounted on the die set or on the bolster to feed from any direction. Two or more can be used to feed separate ribbons from different directions for working and assembling in the die. *H. E. Dickerman Mfg. Co.*

**For more data circle No. 24 on postcard, p. 89.**

## Nut-torquing machine

Automatic nut-torquing machines, designed for accuracy, reduce production cost on the assembly line. These hydraulic powered multi-spindle machines automatically tighten nuts and bolts to given specifications. They will also tighten a bolt to a specified elongation or drive a stud to a given depth. Acting as automatic gaging machines, they reduce scrap because spindles will not drive bolts or nuts if thread fits exceed tolerances or if they are improperly started. Each spindle is powered by a hydraulic

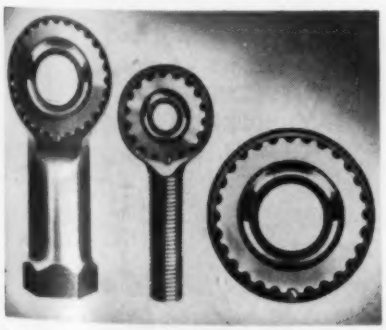


fluid motor. When driving a bolt or nut, the motor runs at low pressure and low speed to prevent driving an improperly fitted fastener. Once sockets engage the fastener, spindles rotate at higher speed for a fast rundown. Within one or two turns of full depth, the machine provides a high torque, slow speed drive. *Hautau Engineering Co.*

For more data circle No. 25 on postcard, p. 89.

## Spherical bearings

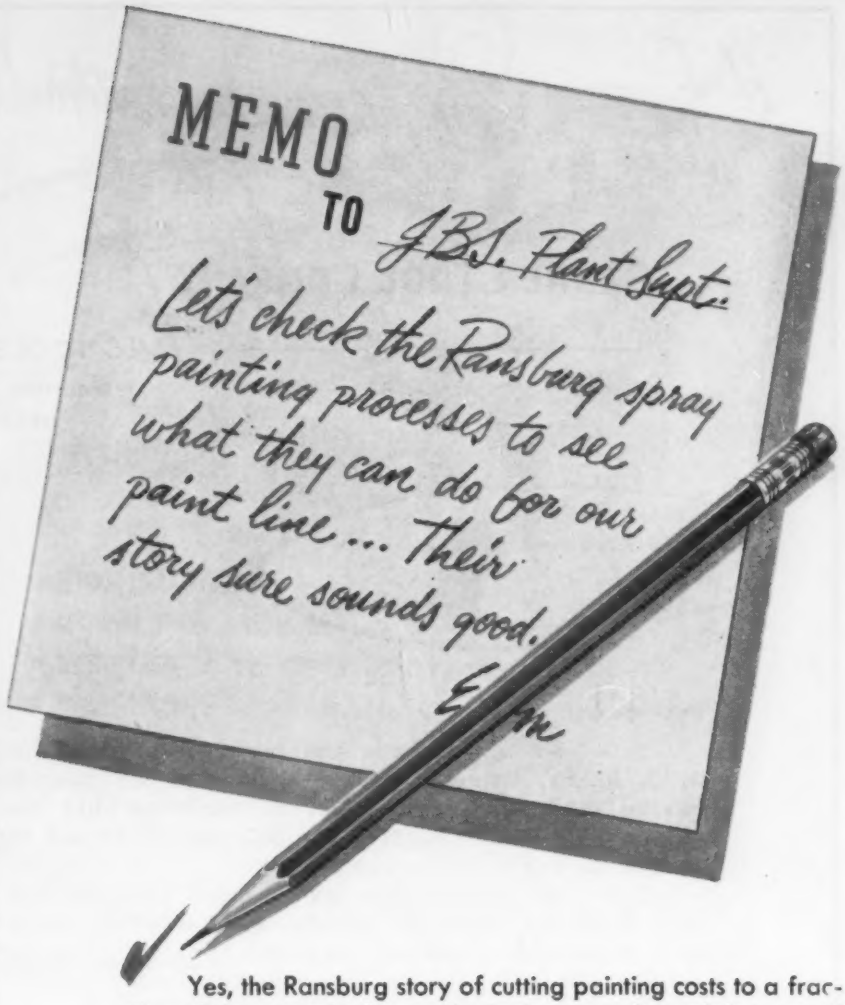
A line of spherical bearings and spherical rod end bearings are supplied in different sizes and types to cover many applications. These products, known as Adjusta-Ball bearings, are used to adjust the



ball race to provide thoroughly accurate positioning of the bearing. This assures greater service life. *Lincoln Park Industries, Inc.*

For more data circle No. 26 on postcard, p. 89.

*Turn to Page 106*



MEMO
TO J.B.S. Plant Supt.
Let's check the Ransburg spray painting processes to see what they can do for our paint line... Their story sure sounds good.
E

Yes, the Ransburg story of cutting painting costs to a fraction of the cost of other methods does sound good. It *is* good!

On most factory production lines, the Ransburg electro-coating processes will provide 2 to 4 times more parts per gallon of paint—automatically—with one operator doing the work of many.

**That's because the Ransburg No. 2 Process is the most efficient spray coating process ever developed for industry's use.**

If you are a manufacturer of painted products, and if your work volume warrants conveyorized painting, we'd like to tell you more about the production efficiency of the RANSBURG No. 2 PROCESS as it applies to YOUR production. Too, we'd like to show you typical examples of customers' production lines where the Ransburg No. 2 Process is setting new quality standards . . . increasing production . . . and at the same time, saving manpower, money and materials.

Write for literature, or send for "Miracles In Painting" —our new 16mm. sound and color movie which shows on-the-job examples of Ransburg Processes at work in industrial plants all over the nation.

RANSBURG

Ransburg **ELECTRO-COATING CORP.**

INDIANAPOLIS 7, INDIANA

H. J.
Here's a really fantastic letter!
P.W.

**BANNER TOOL COMPANY**

BANNER tools DETROIT — *Fine* TOOLS FOR INDUSTRY

17343 FILER AVENUE - TWINBROOK 2-4900

**DETROIT 12, MICHIGAN**

June 16, 1952

Cities Service Oil Co.,
3049 E. Grand Blvd.,
Detroit 2, Michigan
Attention: Mr. P. E. Watts

Dear Sirs:

We called upon the services of your lubrication engineer, Mr. A. J. Blake, in reference to a serious staining condition which we were having with our soluble oil. He analyzed this condition and recommended one of your Chillo Oils. This oil was tried and the rust condition eliminated to our satisfaction.

To our surprise on his next visit he was dissatisfied with our tool life and suggested we use a soluble oil called "Chillo A". Now not only do we have clean machines, but tool life has been increased 20%! While in our plant he asked permission to "look around", which, of course, was granted.

We were using a tapping compound with precision ground taps in order to hold to close tolerances. We did not consider tap breakage excessive but the removal of broken taps was sometimes rather expensive. He recommended we use "Chillo 10Z". Then came the surprise of our lives! With Chillo 10Z we have gone to commercial ground taps (a 300% savings) and can still hold our same tolerances, with a sharper thread, increasing tap life a minimum of 20% plus eliminating expensive removal of broken taps!

We also have a production stamping job which required a new set of dies every month. On his recommendation we tried Chillo 10Z with these dies. Now our die life has increased to at least two months...a saving in die life of 100%, disregarding labor costs. We also increased production 200% per die sharpening!

We tried the same oil on our broaching operation and found that instead of making two cuts we can get the same results now with one. We were using one of your competitors' hydraulic oils and you told us it was a "good oil" and would give us satisfactory performance. BUT, GENTLEMEN, WITH THE EXCELLENT SERVICE YOU HAVE GIVEN, PLUS THE TIME AND MONEY SAVED, YOU MAY REST ASSURED THAT ALL OF OUR LUBRICATING REQUIREMENTS WILL BE PURCHASED FROM YOU.

Yours very truly,
BANNER TOOL COMPANY

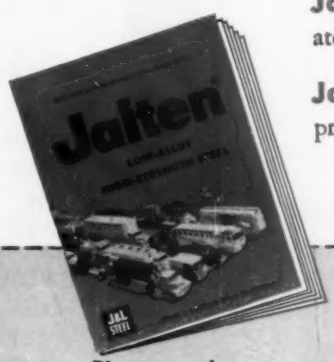
S. F. OLESAK

SFO:sd

# It's time to think of

You'll find the data you want in this book . . . send for your copy TODAY! Features of this book show how JALTEN can help you build better products:

- **Chemical Properties of Jalten**
- **Mechanical Properties of Jalten**
- **Jalten Equivalents**
- **Jalten Application Data**




* J&L's new JALTEN series replaces the famous Otiscoloy Line and may be selected in the following combinations of advantages:

**Jalten No. 1**—High strength, good formability and fabricating, good low temperature.

**Jalten No. 2**—High strength, impact resistance, moderate forming—improved resistance to atmospheric corrosion.

**Jalten No. 3**—High strength, moderate forming—improved resistance to abrasion.

**J&L STEEL**

Jones & Laughlin Steel Corporation
403 Liberty Avenue, Gateway Center
Pittsburgh 30, Pa.

Please send me a copy of "Jalten . . . the low alloy high strength steel."

Name_____

Company_____

Address_____

**JONES & LAUGHLIN STEEL CORPORATION**
PITTSBURGH

ORTON

Torque-Control

MEANS

POWER CONTROL
WEAR CONTROL

• NO JERKING, slip-clutching or racing engines!

• CUSHIONED SHOCK—only the *exact* amount of power needed to move the load!

SEND FOR CATALOG 84

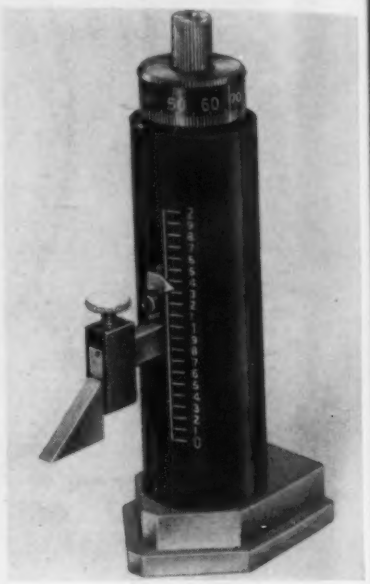
ORTON CRANE AND SHOVEL COMPANY
608 SOUTH DEARBORN STREET • CHICAGO 5, ILLINOIS

• PATENTED



## Height-gage

A direct reading height-gage for quick, accurate work by toolmakers, inspectors and layout men, is graduated by hundredths on the barrel and thousandths on the dial. Figures run vertically for quick, easy reading 0 to 2 in. by thousandths plus any amount inserted between surface plate and base.



Accurate layouts up to 6 in. are obtainable with use of gage and toolmakers 1-2-3 block. Measurements are taken from bottom of base for scribing. All wearing parts, except bearing bronze split takeup nut, are hardened Swedish steel and Electrolized for longer wear. *Electrolizing Sales & Tools, Inc.*

For more data circle No. 27 on postcard, p. 89.

## Paper wiper

An industrial paper wiper for general needs has been developed after extensive testing. It is clean, strong, safe and uniform, highly absorbent, handy and disposable. Each compact box contains 125 wipers, with 18 boxes to a case. Each wiper consists of two sheets of embossed paper, welded together for extra durability. Cleaning action is thorough and dirt retention high. Chemical treatment gives it wet strength. To management, the new wiper overcomes problems encountered in the use of other wiping materials. *Scott Paper Co.*

For more data circle No. 28 on postcard, p. 89.

The Iron Age

# SALUTES

## *Howard U. Herrick*

**Not knowing how to loaf, he gave up retirement, rejoined his former firm—this time as president.**

HOWARD HERRICK failed badly nine years ago. He just couldn't make the grade as a retired executive. Not that he didn't try, though. He'd left his job as executive vice-president of E. W. Bliss Co., moved to Florida to benefit Mrs. Herrick's health. In 1951 he finally gave up, returned to Bliss as president.

Symptoms of his failure actually began to show up early in his retirement. With Mrs. Herrick responding nicely to Florida sunshine and doctor's care, he started a little survey of local business conditions—just to keep occupied, you understand.

He soon noted that orange growers in the area needed trucking and packing facilities. Within a year, he had a modern trucking and orange packing plant in operation, had helped design a new scrubbing and washing conveyor belt to add eye appeal to the fruit.

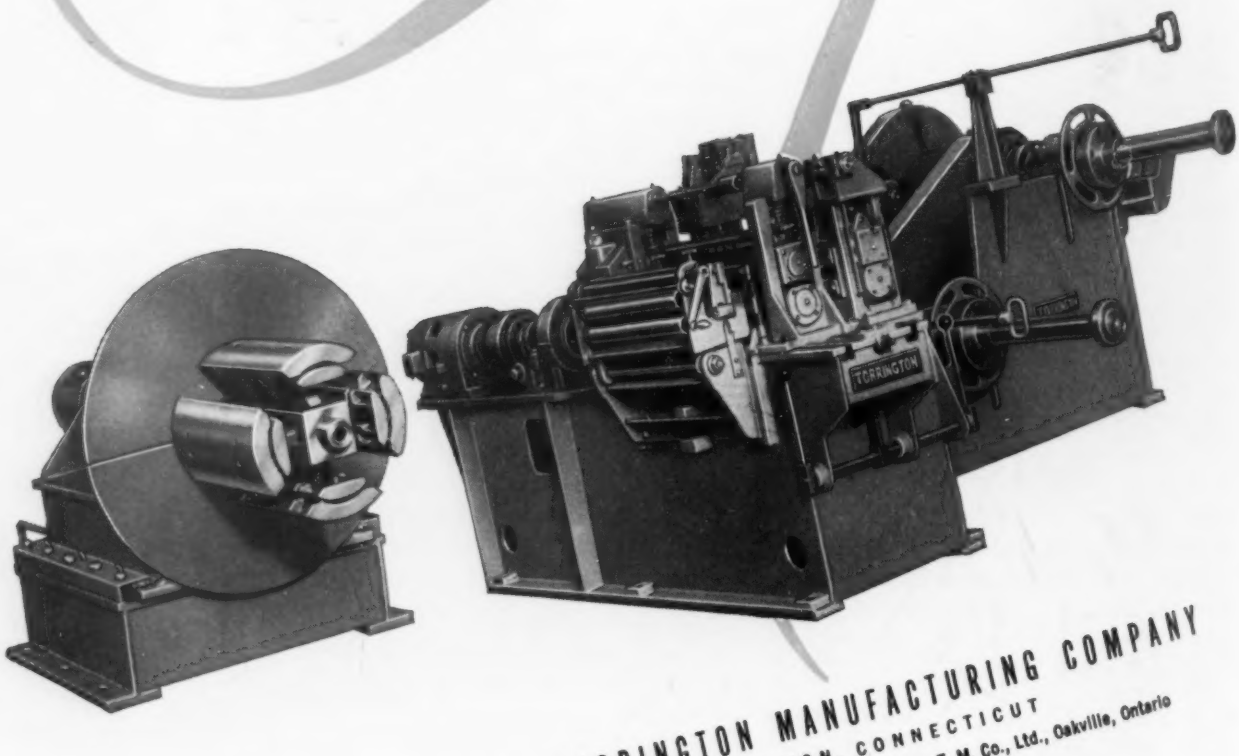
Ventures into new fields are nothing unusual to Howard. Before joining Bliss the first time, he had been a tool room foreman at Packard, factory manager of Brown-Lipe Gear Works, and president of V & O Press Co. He was also first chairman of the Mechanical Press Builders Assn. Today he's busy planning moves to counteract the machine tool industry's historic boom-or-bust cycles.

Other interests have included a real estate business in Syracuse, part ownership of an Albany brokerage firm, rehabilitating a Hudson, N. Y., bank, and helping to start the Hudson Mutual Casualty Co.

Howard spends a lot of his spare time fishing and hunting. But to ex-caddy Herrick, there's still nothing quite like golf.

# TORRINGTON'S NEW MEDIUM-DUTY SLITTING LINE

- Fanning of strips eliminated with two flanged type winding arbors
- Versatility in core size possible with quick-change bolted arbor construction
- Smoother cuts with pull-through operation
- Uniform tension, better cuts with adjustable power-operated expanding arbor payoff
- Easy, rapid setup with hinged entry guide and sliding outer slitting housing
- Anti-friction bearings throughout




THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT

Western Division: Van Nuys, California • In Canada: T. M. Co., Ltd., Oakville, Ontario

*

DESIGNERS AND BUILDERS OF MILL MACHINERY FOR OVER SIXTY-FIVE YEARS

The Iron Age

# INTRODUCES

**Martin J. Wiora,** appointed president, BRYANT MACHINERY & ENGINEERING CO., Chicago, **Charles B. Tansley,** becomes executive vice-president, and **Robert A. Cole,** becomes vice-president.

**Don W. Blend,** elected a vice-president, Wolverine Tube Div., CALUMET & HECLA, INC., Chicago.

**Clair S. Reed,** elected vice-president, director and a member of the executive committee, United Metal Craft Co., Ypsilanti, Mich., subsidiary of GAR WOOD INDUSTRIES, INC.

**H. R. Greenley,** appointed vice-president and general sales manager, AIRWAY PRODUCTS, INC., Pontiac, Mich.

**Richard H. Turner,** elected vice-president in charge of all purchasing, UNITCAST CORP., Toledo.

**James H. McGraw, Jr.,** elected director, AMERICAN LOCOMOTIVE CO., Schenectady, N. Y.

**A. Harry Dahlhauser,** appointed director of research, WIRE SPECIALITIES CO., Santa Clara, Calif., a subsidiary of Keystone Steel & Wire Co.

**Luther Evans,** appointed to newly created position of director of industrial relations, THE DOW CHEMICAL CO., Midland, Mich.

**Thomas Rutherford,** elected director, ALLOY CASTING INSTITUTE, Long Island, N. Y.

**Leo A. Wise,** becomes director of purchasing, AMERICAN SAFETY RAZOR CORP., Brooklyn, N. Y.

**Fred C. Martin,** named comptroller, Dodge Div., CHRYSLER CORP., Detroit.

**Marvin A. Joy,** appointed director, Copper Div., National Production Authority, U. S. DEPT. OF COMMERCE.

**John H. Pugh,** named director of advertising and public relations, AXELSON MFG. CO., a division of Pressed Steel Car Co., Inc., Los Angeles.

**Dr. Michael Ference, Jr.,** appointed chief scientist, Ford Engineering Scientific Laboratory, FORD MOTOR CO., Dearborn, Mich.

**James J. Sherry, Jr.,** named assistant director of purchases, Buick Motor Div., GENERAL MOTORS CORP., Flint, Mich.

**Dr. John P. Howe,** appointed chief, Atomic Energy Research Dept., Reactor Materials Section, NORTH AMERICAN AVIATION, INC.; and **Dr. Robert L. Loftness,** becomes group leader, Chemical Development.

**Burton G. Ebbeson,** appointed field engineer, Worcester area, NORTON CO.; and **Charles M. Wellons,** becomes field engineer, Philadelphia.

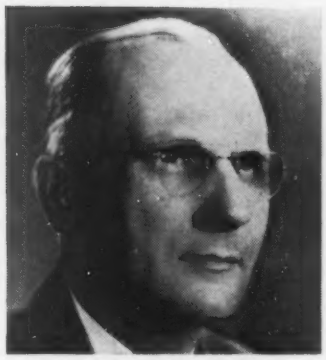
**Theodore Jarvis,** promoted to assistant chief engineer, FORD INSTRUMENT CO., a division of Sperry Corp., Long Island City, N. Y.

**J. B. Froblom,** appointed sales engineer, JAMES H. KNAPP CO., Los Angeles.

**Ben Davies,** becomes ceramic engineer, Research Staff, HARBISON-WALKER REFRACTORIES CO.

**James W. Cameron,** named works engineer, Maple Grove, Ohio plant, BASIC REFRACTORIES INC.

**Earl J. Boyer,** named application engineer, SHEFFIELD CORP., Dayton.



GEORGE J. SCHAD, named president, Tinnerman Products, Inc., Cleveland.

SEWARD H. FRENCH, JR., named vice-president, Crucible Steel Co. of America, Pittsburgh.

PAUL B. BROWN, appointed vice-president and general manager, The Peninsular Grinding Wheel Co., Detroit.

## Personnel

**James H. Cogshall,** becomes sales engineer, Corrosion Engineering Products Dept., Philadelphia, PENNSYLVANIA SALT MFG. CO.

**James B. Duke,** made technical assistant to the general sales manager, ELASTIC STOP NUT CORP. OF AMERICA, Union, N. J.

**Harold O. Smith,** appointed general manager of operations, Salem and Warren, Ohio plants, MULLINS MFG. CORP.; and **A. F. Boone,** named assistant sales manager, Contract Div.; and **A. P. Schmauch,** becomes chief industrial engineer.

**Everett W. Lundy,** appointed assistant sales manager, Peerless Pump Div., FOOD MACHINERY & CHEMICAL CORP., Los Angeles.

**Calvin J. Timmins,** becomes member of sales force, J. ALEX GORDON & CO., Detroit.

**Fred A. Milnes,** appointed press specialist, HARRINGTON-WILSON-BROWN CO., Mt. Vernon, N. Y.

**Don H. Smith,** names sales promotion manager, Kaiser-Willys Sales Div., WILLYS MOTORS, INC., Toledo; and **R. E. Duffy, Jr., E. L. Anderson** and **Charles W. Grinstead,** appointed supervisors, southeast, Great Lakes and southwest regions.

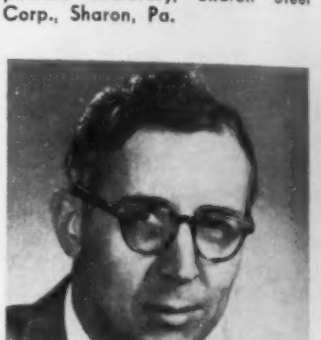
**Dr. Kurt Peter Anderko,** appointed full research metallurgist, Armour Research Foundation, ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago.

**I. P. Payne,** appointed manager, Industrial Power Sales, Industrial Power Div., INTERNATIONAL HARVESTER CO.

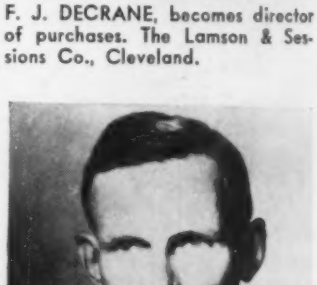
**George S. Leonard,** promoted to works manager, THE NATIONAL SUPPLY CO., Houston, Texas.

**Donald E. De Canniere,** will supervise engineering work with bulldozers and cable controls, Engineering Dept., CATERPILLAR TRACTOR CO.; and **John A. Junck,** will supervise work on hydraulic controls and tool bars.

KENNETH O. SWANSON, appointed secretary, Sharon Steel Corp., Sharon, Pa.



F. J. DECRANE, becomes director of purchases. The Lamson & Sessions Co., Cleveland.



GEORGE S. LEONARD, promoted to works manager, The National Supply Co., Houston, Texas.

E. COURTNEY SORRELLS, appointed division superintendent of steel production, Gary Works, U. S. Steel Corp.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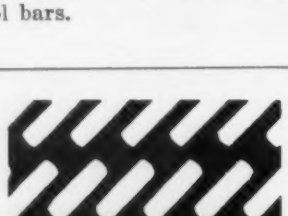

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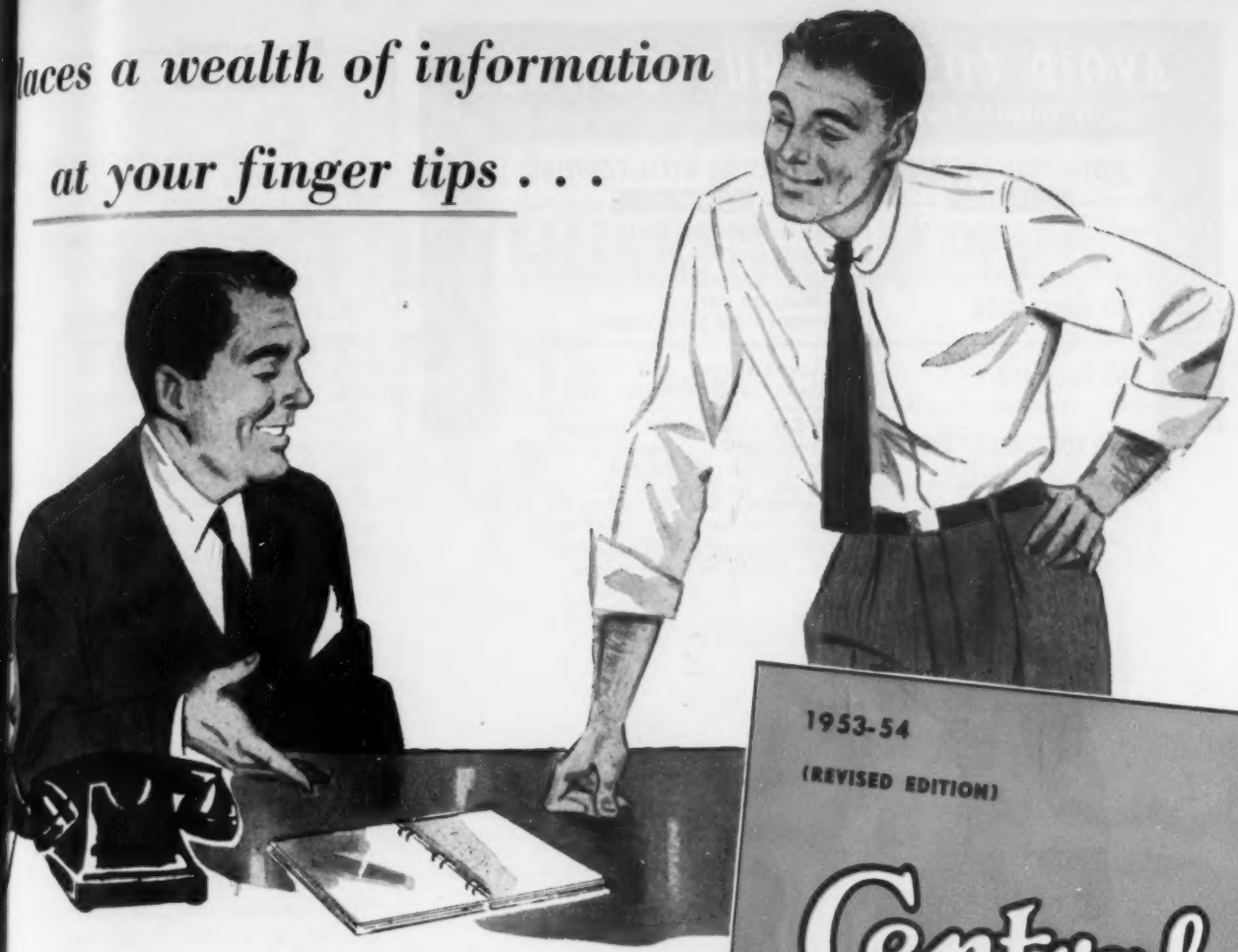

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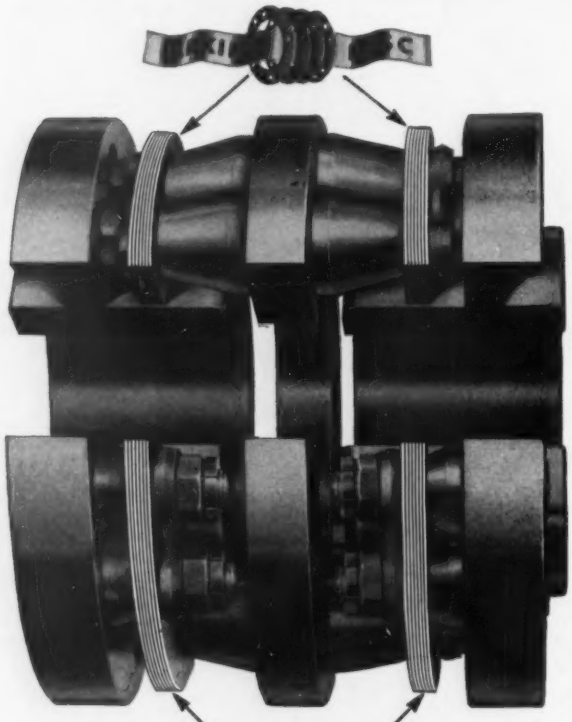

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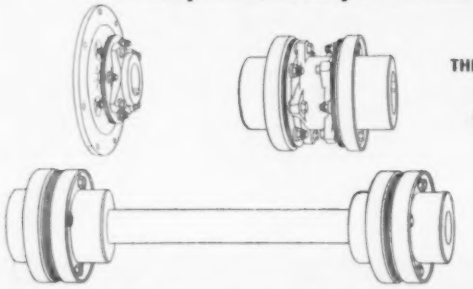

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## Personnel

*Continued*

**A. W. Morgan,** named general manufacturing manager, CONSOLIDATED VULTEE AIRCRAFT CORP., San Diego, Calif.; and **W. L. Young,** made works manager.

**P. C. Haldeman,** promoted to works manager, Foote Construction Equipt. Div., BLAW-KNOX CO., Pittsburgh, and **H. C. Stirling** becomes general superintendent, Rolls Div.

**M. J. Cauger,** promoted to assistant district sales manager, Chicago area, and placed in charge of Milwaukee office, REPUBLIC STEEL CORP.

**Jack C. Bever,** becomes district representative, FRANK G. HOUGH CO., Libertyville, Ill., and **Dwain Richey,** also becomes a district representative.

**George L. McCaffrey,** promoted to general purchasing agent, THE ELECTRIC AUTO-LITE CO., Toledo.

**Howard L. Wright,** becomes sales representative, Philadelphia area, southwestern New Jersey and easternmost Pennsylvania for HANSON-VAN WINKLE-MUNNING CO.

**Gilbert Sherman,** appointed electronic tube sales representative, Pacific Coast area, WESTINGHOUSE ELECTRIC CORP.

**Harry C. Fleming, Jr.,** appointed representative, Youngstown area, JONES & LAUGHLIN STEEL CORP., Warehouse Div.

**John C. Bradford,** appointed assistant to the superintendent of manufacturing, PLUME & ATWOOD MFG. CO., Waterbury, Conn., Fabricating Div.

**William E. Johnson,** appointed district representative, Cleveland area, GISHOLT MACHINE CO.

### OBITUARIES

**Albert A. Teeter,** 65, retired vice-president and director, Chas. Pfizer & Co., Inc., at his home in Rumson, N. J.

**Henry W. Bartling,** 60, application engineer in charge of the metal industry group, Allis-Chalmers Mfg. Co., Motor and Generator Section, recently.

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*Reduces hand work—*

# BETTER TUMBLING METHODS CUT PARTS FINISHING COSTS

**PART I**

By Wayne Stone
Process Engineer
Bridgeport-Lycoming Div.
Avco Mfg. Corp.
Stratford, Conn.

◆ Outstanding reductions in burring and bench finishing costs have been achieved by Bridgeport-Lycoming through systematic application of improved tumbling methods . . . Key to success of the operation is its careful integration with other manufacturing operations.

◆ Topmost in successfully rolling precision machined parts is the exacting combination of granite chips, abrasives, and compounds for each particular job . . . Add close timing and special attention to cleanliness and the process permits handsome cost savings.

◆ Parts range from very small to very large in soft to hard metals . . . Complex and closely machined surfaces have been successfully worked . . . Uniformity of radii and general improvement of microinch finish are attained . . . The rolled surface aids plating and painting processes, is more oil adhesive.

◆ FINISHING parts by rotating in machines—generally referred to as tumbling and rolling—has made rapid strides as a manufacturing process during the past 20 years. Modern tumbling or rolling procedures are vastly different from the wet tumble rolling of the past however. Beginning with World War II the need for greater production encouraged experimentation and produced many new and unusual applications. Present rolling processes have helped management make impressive cuts in high finishing costs resulting from tedious and costly hand burring while further improving product quality.

At Bridgeport-Lycoming Div. of Avco Mfg. Corp., Stratford, Conn., many unique tumbling applications have been made. Parts are rolled to remove flash and hangers from forgings and castings, and remove rust and heat treat scale. In addition burrs and round corners are removed and sharp edges broken to exacting blueprint requirements on both soft and hard materials. Uniformity of radii formed and general improvement of microinch finish have been highly satisfactory. Also, the "rolled" surface is a definite aid to plating and painting processes as well as being more oil adhesive.

At Bridgeport-Lycoming about 50 pct of all precision aviation engine parts are rolled. This figure includes subcontracted parts. Of precision parts machined at the Bridgeport-Lycoming plant, the percentage rolled may run as high as 75 pct. A wide variety of parts of many different materials, sizes, shapes and weights and at different stages of manufacture are included. Some parts are rolled three and four times in the course of manufacture. Parts range from a steel valve tappet guide roller, Rc 60 to 65, which requires an edge break of 0.010 to 0.020 in. radius, to an aluminum diffuser plate with thin vanes and exacting requirements both dimensionally and in surface finish.

The Roto-Tumbling program has been fortunate in that management saw early advantages of the process and the program was

instituted along with the other manufacturing processes. As the plant grew and production increased, tumbling applications multiplied. Now, in addition to roll finishing many small parts and gears, we have also, through careful experimentation, been able to successfully roll large intricate major parts.

It is not necessary to completely deburr or form all radii in order to show a saving with rolling. The method is not a "cure all" for all deburring or polishing problems but is a valuable adjunct to existing manufacturing processes. In any rolling program, the important factor to keep in mind is that loading and unloading time is the only man-hour cost involved.

The machines used were built by the Roto-Finish Co. of Kalamazoo, Mich., are 8-sided metal barrels divided in two, three or four neoprene-lined compartments. The two-compartment machine has 18 cu ft to each compartment; the three-compartment machine has 12 cu ft to each compartment; the four-compartment machine has 9 cu ft to each compartment.

A commercial granite chip has proved satisfactory and flexible. This chip, in various formulas, has been applied to most parts. Limestone chip and steel burnishing balls are used for specialized requirements. In addition, various chemical compounds are used. No one compound achieves satisfactory results in all operations. Correct application of the compound best suited to produce the desired results is important.

Compounds in general furnish lubrication for the chip mass and parts being processed and prevent tarnishing, etching or rusting of parts. They maintain cleanliness in the compartment and chip mass, provide the abrasive necessary for a desired result and can be used to prevent chips from becoming glazed or loaded with fine metal abraded particles. Many compounds contain water softeners which take care of the hardness of the water used.

Compounds used at Bridgeport-Lycoming range from highly alkaline to non-alkaline, harshly abrasive to non-abrasive, acid to acid neutralizer. These extremes are blended to attain the desired result from rough scale and flash removal through precision deburring and radii forming to high luster finish polishing.

Results achieved in modern roll finishing depend mainly upon how exactly the media

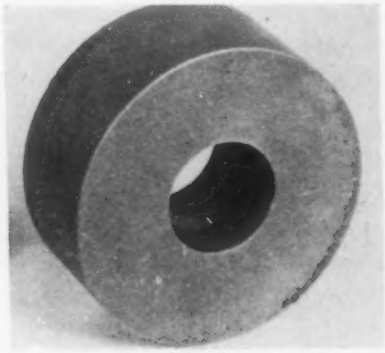

FIG. 1—Steel bushing cut from 2⅛ in. bar, tumbled after heat treat and grind, is simple rolling job.

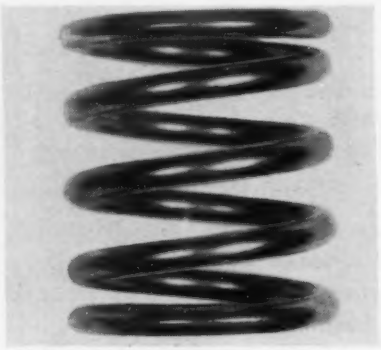

FIG. 2—Heat treat scale, discoloration are removed, and springs are polished in rolling operation.

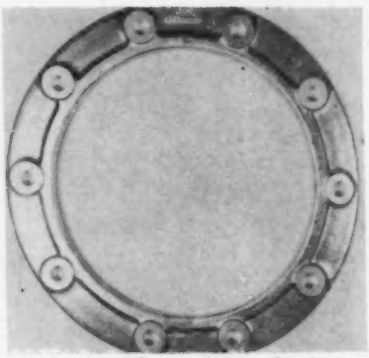

FIG. 3—Edges of this aluminum forging have been broken and surfaces prepared for painting.

FIG. 4—Some parts such as this aluminum diecasting, are rolled only to improve appearance.

FIG. 5—Steel forging, about 4 in. in diam, was successfully rolled despite many curves.

FIG. 6—Some hand burring must be done prior to rolling of this drilled steel spacer.

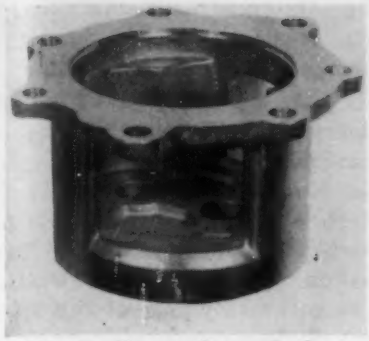

FIG. 7—Twenty-five of these aluminum pump bodies are processed at one time. Shown after rolling.

FIG. 8 — Tumbling of crankcheek screw saved 97.2 pct over previous finishing methods.

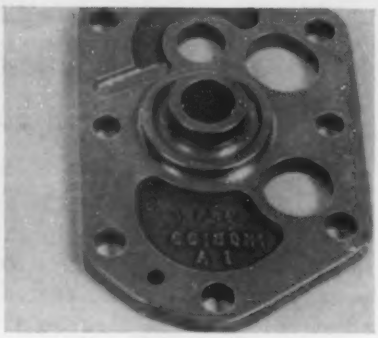

FIG. 9—Close tolerances on this machined magnesium plate were not affected by tumbling.

formula fits the requirements of the job at hand. The compound can "make or break" the operation. For instance, the proper compound to use for attaining a polished finish on aluminum would produce no appreciable result in rust and scale removal on steel forgings. Use of a scale remover compound on aluminum would be disastrous.

Generally, the mass used in each compartment is from ½ to ⅔ of compartment capacity. This is adjusted to suit the type of part being processed. With rough forgings or castings a smaller mass is used to get greater action. However, in processing finished parts of soft metal and perhaps having thin sections a much larger, milder acting mass is demanded.

Chip sizes will vary with the size, shape, size of holes or cavities, type of metal, stage of manufacture and surface finish desired.

Once the correct formula has been established, three major factors are involved in successful processing.

1. Maintenance of proper chip size is of prime importance. Even though commercial granite wears well, the individual chip size is reduced through use. Chips are frequently and carefully screened, graded and stored according to their respective size. Frequency of this screening depends upon the type of operation. In operations of exacting requirements the chip mass is screened after each run.

2. Chip cleanliness is important. Thorough rinsing of the working media and flushing out of the machine to remove all foreign or refuse matter is necessary.

3. Extreme care must be used in handling precision machined parts.

Examples of successful tumbling operations at Bridgeport-Lycoming have been chosen to represent different types of parts rolling.

Fig. 1 shows a simple bushing machined from 2⅛ in. steel bar stock. Thickness is approximately ⅝ in. and the hole about 1¼ in. Before rolling, the part is completely machined, hardened and ground. The process rounds edges and improves inside and outside finish. Part is run 1 hour, 250 to a compartment, in a two-compartment machine using 1000 lb of No. 4 granite chips.

The steel wire spring, Fig. 2, is successfully rolled without disturbing spring quality. The part is about 1⅜ in. in diam by 1⅝ in. long, and is purchased semifinished. Rolling removes heat treat scale, discoloration and polishes the part. Springs are processed 1500 to the compartment in a two-compartment machine, using 1000 lb of No. 4 chips in a two-cycle operation.

First cycle is 1 hour using a scale removal

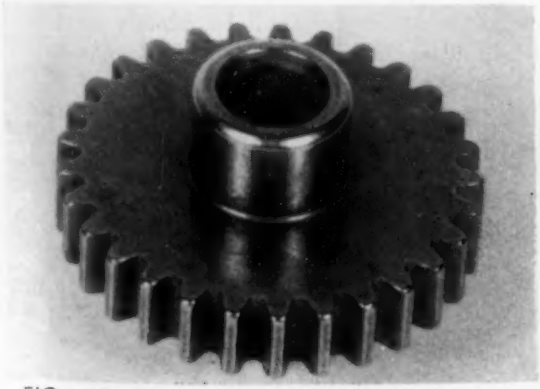

FIG. 10—Five rolling operations were performed on this gear to attain desired results.

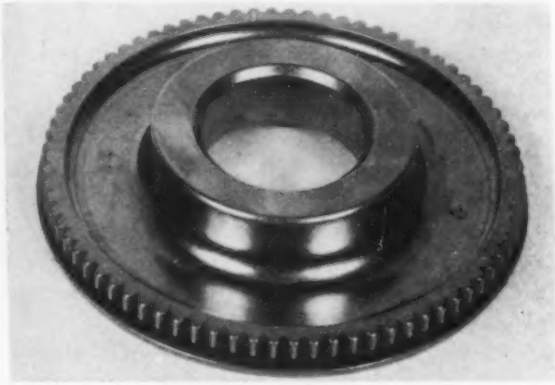

FIG. 11—Splined clutch has been rolled once to remove scale, and again to form radii.

***Important savings in finishing costs have resulted from tumbling of precision parts . . .***

compound. Second cycle runs 30 min using the same chip mass but rinsing out and changing to a burnishing compound. After tumbling the part is shot peened and coated. Formerly an abrasive blast was used on this part with a standard of 0.15 min per piece. Rolling resulted in a saving of 0.10 min per piece.

The aluminum alloy forging, Fig. 3, is processed for edge break and to prepare the surface for paint. After the 10-in. diam spacer is machined on both sides and ten holes are drilled and reamed, it is run for 1 hr in a two-compartment machine. Fifty pieces make a load, using 800 lb of No. 4 granite chips. Saving amounted to 96 pct of burring time and part surface was improved.

### Tumbled for appearance

Roll finishing of aviation engine parts differs from usual commercial rolling operation. While commercial salability requires high luster, processing of engine parts places emphasis on the controlled forming of radii and edge breaks. However, some parts are processed to improve appearance in addition to edge rounding.

Fig. 4, an aluminum diecasting, is rolled mainly for appearance. The part is about 3 x 7 in., worked 100 per compartment in a three-compartment machine. Time is 1 hour in 800 lb of No. 4 chips using a burnishing compound.

One of the more intricate small parts successfully rolled is shown in Fig. 5. It is a steel forging, machined and ground to a very close dimensional tolerance. Edges and surfaces requiring action present themselves at a number of odd angles and positions.

This part, approximately 4 in. in diam, is rolled five times, the final time being to "polish and blend" after the part is completely finished. A general improvement in quality and uniformity plus an overall saving of 41.6 pct of previous finishing time was possible.

The steel spacer, Fig. 6, about 5 in. in diam x 2⅜ in., shows a limitation of the method. The overall break edge required is 0.003 to 0.015 in. If the piece were processed with the edges of the holes sharp it is possible the edges of the 7/32-in. holes could be broken to 0.003 in. at least at the OD end.

However, in the time required to accomplish this break, the outer edges of the piece, subjected to much more action than the hole edges, would receive a break in excess of 0.015 in. Therefore, it is necessary to burr and break the ID edges and rough break OD edges of the holes before processing. Also, ID grooves must be rough broken. Outer edges are left sharp. Rolling blends the rough breaks and forms the required radius on the outer edges.

Saving on this piece amounted to 15.9 pct of the previous burring time. Running time is 2 hours in a mass made up of 400 lb of No. 3 chips, 300 lb of No. 5 chips, and 200 lb of No. 7 chips. Parts are processed 10 to a compartment in a two-compartment machine. Saving percentages on this part are relatively small. If this were the only part of this type processed, rolling would not be practical unless production quantities were very high. However, with many such parts in an all-inclusive roll finishing program, the cost picture becomes more feasible for parts having similar limitations.

### Suit compound to metal

Both magnesium and aluminum parts may be very successfully rolled if the proper formula is established. Both metals react violently to the improper combination of chemicals. If rolling of metals is contemplated, specific information should be received from the compound manufacturer.

The aluminum pump body, Fig. 7, rolled twice during manufacture, is shown at first processing. The part has been rough machined and is rolled to burr and break sharp edges. After finish machining it is again rolled to finish burr and break edges 0.003 to 0.015 in. Twenty-five parts, approximately 4 in. in diam x 2½ in. are processed in a two-compartment machine with 400 lb of No. 4 granite chips for 1 hour. Resultant saving is 65.8 pct of replaced burring time.

Although certain materials are more easily rolled than others, rolling does not play favorite in terms of saving to any particular material or part. The crankshaft screw, shown in Fig. 8, is Roto-Tumbled twice with a saving of 97.2 pct over previous sand blast and bench time. First rolling is after rough machining, harden and draw.

### No reduction in thread OD

Fifty at a time are run in a two-compartment machine. After the part is completely machined, ground, the shank lapped and the thread rolled, it is again rolled. Three are run to a compartment in a four-compartment machine. In both operations, mass is 800 lb of No. 3 granite chips with compounds to suit. No reduction in thread OD is experienced and microinch finish on the shank is considerably improved while removing grinding burrs and edges.

The magnesium plate, Fig. 9, is highly machined. Hole sizes and center distances have exacting tolerances. It is rolled at two different points during manufacture with a saving of 97.6 pct. This part is processed 100 at a time in 800 lb of No. 4 granite chips for 1 hour.

Successful rolling of gears presents several problems. Breaking of edges at the root of the gear tooth is always a problem. In some cases, where the tooth is large enough and the difference between the break required at the root and that specified at the top of the booth is great enough, tumbling can accomplish the entire operation. More often some hand or machine burring is needed to prebreak the edge at the root. No difficulty has been experienced in so far as change in size or tooth form is concerned. Teeth are not affected in this way nor are close dimensions or tapers changed.

Due to the many machining operations required on gears, there are several points during manufacture where tumbling has been advantageous. The gear, Fig. 10, is rolled twice to remove heat treat scale and three times to burr and form radii. The piece is approximately 1¾ in. in diam and has 29 teeth.

This gear is run 100 to the compartment in a four-compartment machine. Total saving realized as against previous methods is 94.1 pct.

The splined clutch, Fig. 11, is processed twice. The first rolling operation removes heat treat scale. After the piece is completely finished it is gain rolled to form radii to 0.015 to 0.020 in. To achieve this amount of edge break on a part approximately 4 in. in diam and having 78 spline teeth required a special formula.

At the first rolling parts are processed in a three-compartment machine, 200 to the compartment for 1 hour. The second rolling is also 1 hour, with 60 per compartment. The media used are 400 lb of No. 2 chips, 200 lb of fine abrasive and 4 lb of alkaline compound. The No. 2 chips act as a pusher for the fine abrasive and keeps the parts separated. Thus it is possible to completely blend a partially formed 0.015 to 0.020 in. radius edge break while running the pieces "loose." Saving on this part amounted to 66.5 pct.

Gears with tapped holes can be successfully rolled without damage to threads when the process is properly applied. A chrome moly steel master rod forging, Fig. 12, is rolled in the early stages of machining. The piece is processed "loose" in the mass, one piece to a compartment in a four-compartment machine. Later, when the part has been finish machined, it will be processed in a fixture machine. The first rolling operation removes rust and scale. Running time is 1 hour in 400 lb of No. 2 and 200 lb of No. 7 chips with a scale remover compound. This is followed by a rinsing of the mass, change of compound to neutralize and a second run of one half hour.

The second rolling, after the piece has been completely rough machined, burrs and breaks sharp edges 0.003 to 0.015 in. Run is 1 hour in 500 lb of No. 2 chips and compound to suit. Since the part is approximately 19 in. long and 9 in. at the widest point and quite heavy it is impractical to run more than one to a compartment. In terms of machine load this means four to a machine using a four-compartment machine.

When the part is fixture-rolled after finish machining four will be run at a time. Previous burring time on the two operations thus far partially replaced was 16.60 minutes per piece. By rolling, a saving of 11 minutes per piece has been possible.

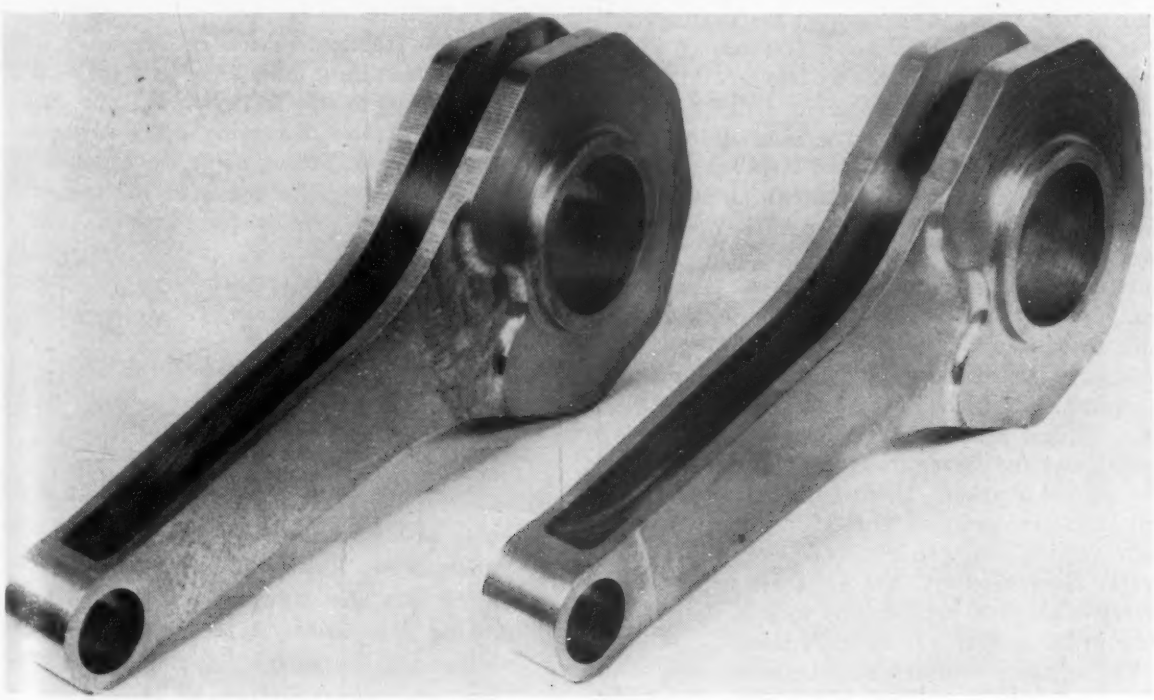

FIG. 12—This chrome moly steel master rod, right, was rolled twice during processing.

*System scours sand—*

# Low-Cost Unit Reclaims Foundry Sand

By Don Rosenblatt, Foundry Metallurgist
Bob Thompson, Co-engineer
American Foundry & Machine Co.
Salt Lake City

◆ Hauling 150 tons of sand from Illinois to a Utah foundry was quite costly—so much so that the foundry decided to build its own sand reclamation system . . . Space occupied by the system is a 14 x 14-ft area, 2½ stories high.

◆ Scouring action of an agitator on a slurry containing 30 pct solids removes carbonaceous deposits from the sand grains . . . Weight of solids discharged in slime is only 50 lb per ton of sand . . . Savings with the system are about 80 to 85 pct.

◆ UTAH SAND is generally not suitable for casting. When the foundry is located in Salt Lake City, as is the American Foundry & Machine Co., one alternative was to import sand from another state—in this case from Illinois. Haulage became a major expense item and was the principle reason for seeking an efficient, inexpensive system of sand reclamation.

The foundry occupies about 120,000 sq ft of floor space, and produces 500 tons of alloy steel and 75 tons of gray iron castings per month. For this volume of castings, about 150 tons of sand must be introduced into the system monthly.

In 1951, after considerable investigation, the company came up with what seemed the best solution. It designed, built and installed its own sand plant. Operations were started the following year. At first, the system, shown in the operating diagram in Fig. 1, had some "operating bugs" but these have since been eliminated. The compact, low-cost unit has proven that the ideas incorporated into it were sound.

Sand is moved from the hopper by a vibrating conveyor, shown in Fig. 2, which controls the rate of feed. A conical wetting pan between the feeder and the Deveraux-type agitators reduces the amount of splash. These 4-ft deep x 6-ft diam agitators are equipped with 24-in. impellers and four vertical channel iron baffles on the walls. Water introduced into the agitators produces a slurry of about 30 pct solids by weight. Retention time in the agitators is about 30 min.

The agitator produces an intense scouring action on the grain surfaces which removes baked carbonaceous and dead bond deposits, and separates the agglomerated compounded sand grains. The effect of this scouring action is shown by the micrographs in Fig. 3.

Overflow from the second agitator is elevated by either of two, one a standby, 2-in. Denver Equipment sand pumps and discharged to a 12-in. x 12-in. x 2-ft head box. This box accommodates slight surges from the agitators and pumps. The surge box then discharges into a 10-in. centriclone which makes a sand slime separation as listed in Table I.

The slime fraction is discharged as waste with no further treatment other than in a 4 x 4 x 2-ft baffled trap box to stop tramp sand. To produce a slurry with greater dispersion and a slower settling rate than this slime would be very difficult. Moreover, the weight of solids so discharged is less than 50 lb per ton of sand treated—a very small amount.

The underflow of the centriclone carries about

TABLE I
**SAND SLIME SEPARATION**

| Screen Mesh Size | Feed and Weight Retained, pct | Underflow Weight Retained, pct | Overflow Slime Retained, pct |
|---|---|---|---|
| 6 | 0 | 0 | 0 |
| 12 | .2 | 0 | 0 |
| 20 | .4 | .5 | 0 |
| 30 | 11.9 | 9.5 | 1.5 |
| 40 | 33.2 | 36.2 | 2.6 |
| 50 | 21.6 | 27.9 | 5.1 |
| 70 | 16.0 | 15.1 | 6.0 |
| 100 | 9.1 | 10.0 | 5.6 |
| 140 | 2.5 | .8 | 24.5 |
| 200 | 1.5 | 0 | 16.2 |
| 270 | 1.6 | 0 | 18.2 |
| PAN | 2.0 | 0 | 20.3 |

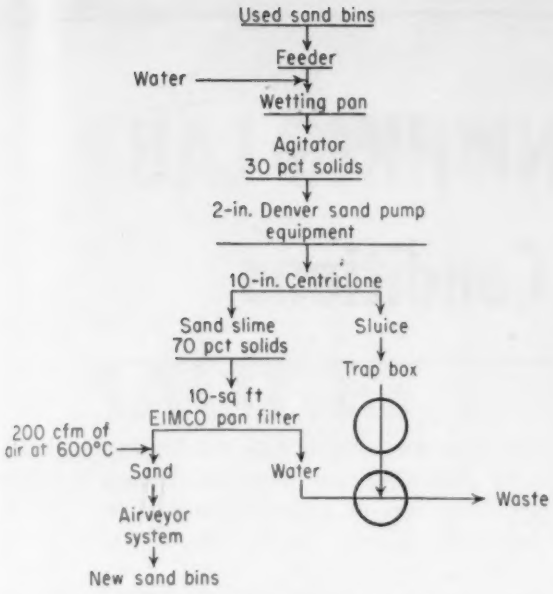


FIG. 1—Operating diagram of sand plant shows the order of essential processing steps for reclaiming sand. This system is saving 80 to 85 pct of original costs.

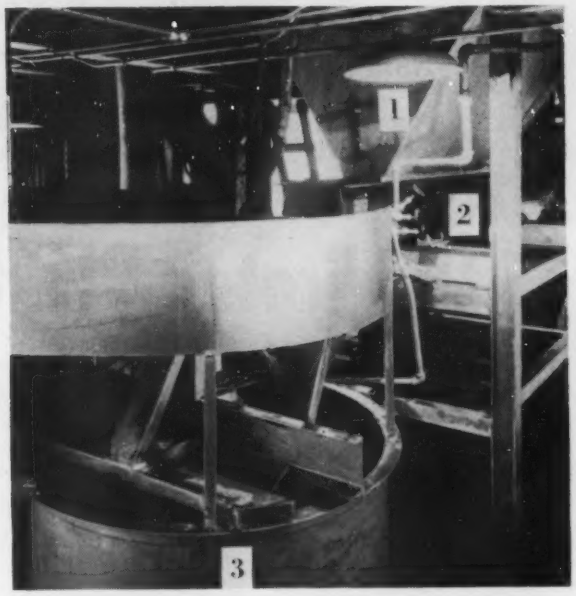


FIG. 2—Start of the cleaning process is at the hopper (1) where a vibrating feeder (2) moves sand into agitator (3) which produces an intense scouring action.

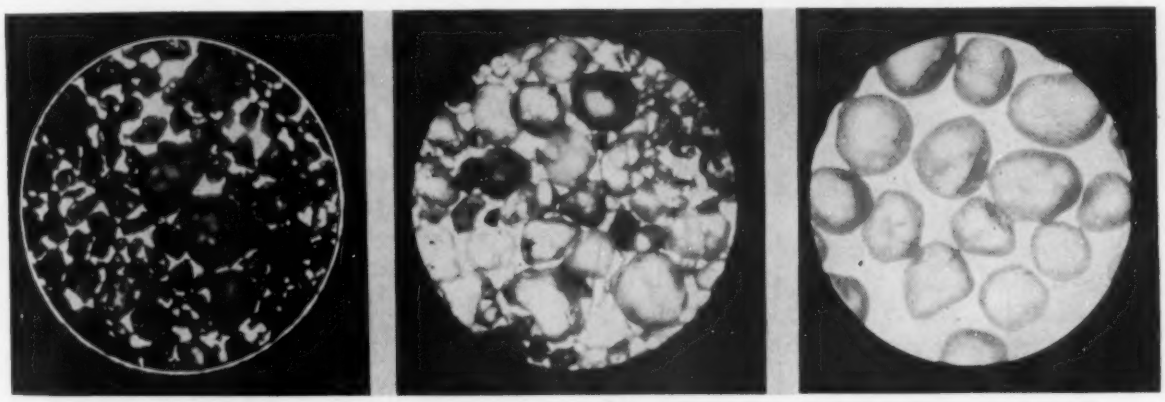

FIG. 3—Effectiveness of sand reclamation system is told by these micrographs. Left, condition of sand as received. After use, sand from molds (center) contains carbonaceous and dead bond deposits which are completely removed by cleaning (right).

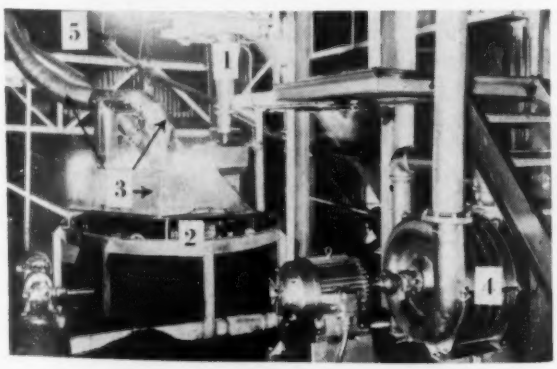


FIG. 4—Centriclone (1) makes sand slime separation, slime fraction of which is discharged as waste through piping (5). Underflow of centriclone, carrying about 70 pct solids, is fed directly to pan filter (2). Exhauster (4) draws air through hood and ducts (3) in evaporating residual moisture.

70 pct solids and is fed directly to an Eimco 10-sq ft rotary pan filter which is shown in Fig. 4. The filter is driven by a ½ hp speed reducer geared motor. The filter media is a 60-mesh stainless steel screen. Vacuum for the filter is produced by a Hoffman exhauster which draws 200 cfm of air at 6 in. of mercury. Water is drawn off and air, at 600°C supplied through the hood and ducts, is drawn through the filter cake to evaporate residual surface moisture.

Hot air is supplied by a gas-fired Maxon heating unit capable of producing 400,000 Btu per hr. The heated, partially dried sand is automatically dumped from the filter pans and cooled, allowing further drying by falling to a sand box through a rising column of air. From the sand box, it is conveyed by an air conveyor system to the new sand bins. Total space occupied by this plant is a room 14 ft wide x 14 ft long x 2½ floors high.

*Flexible setup—*

# NEW METAL FINISHING LAB Duplicates Plant Conditions

By W. G. Patton
Asst. Technical Editor

◆ New research facilities recently completed by Wyandotte Chemicals Corp. permit full-scale investigation of metal finishing operations . . . Both spray and immersion-type cleaning and plating of many full-sized parts are performed.

◆Flexibility of construction materials and design enables a wide variety of plant conditions to be duplicated . . . Spray washing equipment is unusual in that units of a 6-stage machine are interchangeable.

◆ INDUSTRIAL experience in metal cleaning frequently shows a wide gap between the results of small scale laboratory cleaning tests and those obtained from day to day in metal finishing plants. The new, unusually flexible metal finishing, cleaning and plating laboratories recently completed by Wyandotte Chemicals Corp. furnishes facilities to narrow the gap between laboratory and plant conditions. The setup permits nearly full-scale investigation of metal finishing operations with great flexibility and permits scientific investigation of industry's metal cleaning problems without interruption of production.

Facilities in the laboratory permit both spray and immersion type cleaning and plating of many full-sized parts. Operations can be carried out under near production conditions. Flexibility of construction materials and design of facilities affords a virtually unlimited range of cleaning and plating cycles. Spray washing equipment is unique in that units of the 6-stage machine are movable and can be interchanged.

In designing the pilot installation, extreme flexibility was of prime importance in order to duplicate plants conditions throughout the country. The floor plan, Fig. 1, shows the arrangement of plating and cleaning tanks and the multi-unit spray washer. The table on p. 125 shows details of construction. Fig. 2 shows the arrangement of the longer rows of tanks. Cleaning tests are also conducted on the shorter row.

Solutions can be filtered by means of a portable pump and filter or transferred from one tank to another by means of a plastic pump constructed of furane resin. Background, Fig. 2, shows a standard type salt spray cabinet.

## Conveyor speeds varied

The rest of the pilot room is occupied by the m 6-stage spray washing machine, Fig. 3. Here the general arrangement of the machine is seen with the 70 gal solution tanks on the aisle side for easy access. Steam for heating the tanks of solution from room temperature to 180°F is supplied by lines from the basement. Multi-tube coils are used. A maximum solution pressure of 60 psi is supplied by 5 or 7½-hp motors connected to the proper type of pump.

Pressure to the 22 spray nozzles may be controlled at a steady state in the pressure range indicated by manipulation of the two valves which are shown tagged in the lower left hand corner of Fig. 3. Temperature variation is held within close limits by the control units seen in a line along the upper middle section of Fig. 3. Easy filling of solution tanks is accomplished by removing the small two-handled covers as shown at the left-hand side of the operator in Fig. 3. The use of a large sized piping and valves at the front of the machine permits rapid dumping of the tanks and preparation of new solutions. The overhead conveyor can be varied in speed from about 1.25 to 12 fpm, providing a wide range of contact time for parts in the sprays of any given section.

Another factor contributing to extreme flexibility is the fact that each stage is entirely independent of the others. In the lower part of Fig. 3 is shown a series of triangular shaped rails

The Iron Age

# SALUTES

## *Howard U. Herrick*

**Not knowing how to loaf, he gave up retirement, rejoined his former firm—this time as president.**

HOWARD HERRICK failed badly nine years ago. He just couldn't make the grade as a retired executive. Not that he didn't try, though. He'd left his job as executive vice-president of E. W. Bliss Co., moved to Florida to benefit Mrs. Herrick's health. In 1951 he finally gave up, returned to Bliss as president.

Symptoms of his failure actually began to show up early in his retirement. With Mrs. Herrick responding nicely to Florida sunshine and doctor's care, he started a little survey of local business conditions—just to keep occupied, you understand.

He soon noted that orange growers in the area needed trucking and packing facilities. Within a year, he had a modern trucking and orange packing plant in operation, had helped design a new scrubbing and washing conveyor belt to add eye appeal to the fruit.

Ventures into new fields are nothing unusual to Howard. Before joining Bliss the first time, he had been a tool room foreman at Packard, factory manager of Brown-Lipe Gear Works, and president of V & O Press Co. He was also first chairman of the Mechanical Press Builders Assn. Today he's busy planning moves to counteract the machine tool industry's historic boom-or-bust cycles.

Other interests have included a real estate business in Syracuse, part ownership of an Albany brokerage firm, rehabilitating a Hudson, N. Y., bank, and helping to start the Hudson Mutual Casualty Co.

Howard spends a lot of his spare time fishing and hunting. But to ex-caddy Herrick, there's still nothing quite like golf.

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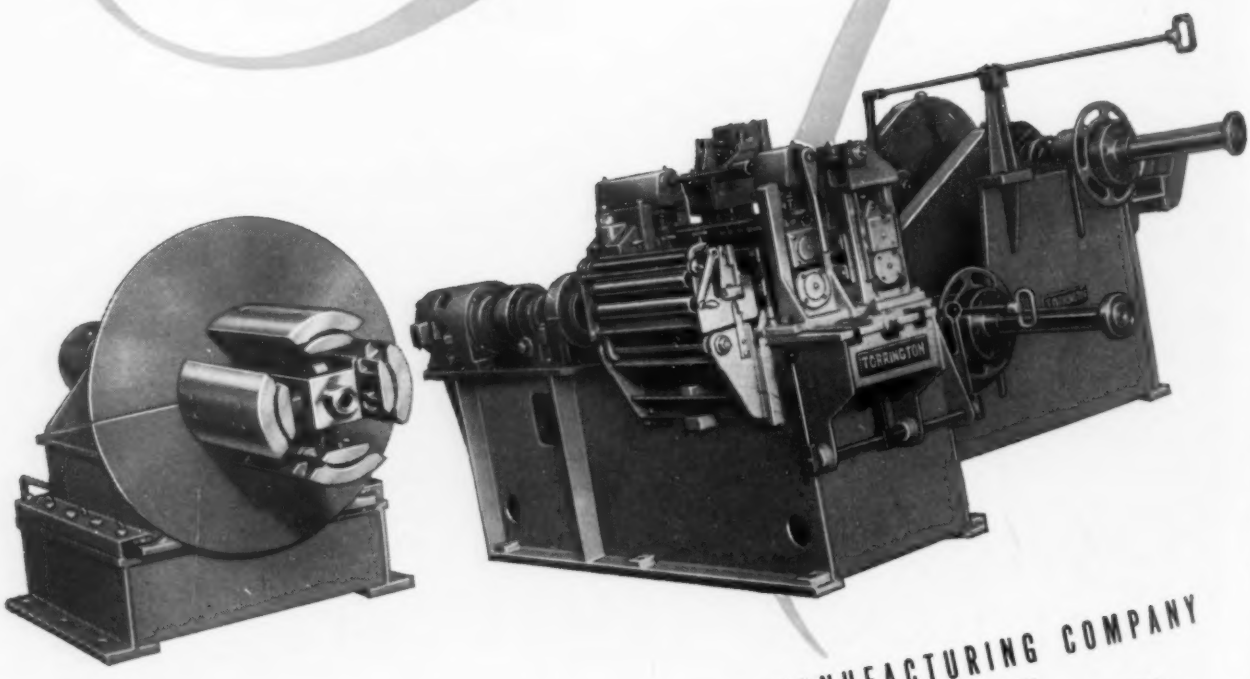


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# INTRODUCES

**Martin J. Wiora,** appointed president, BRYANT MACHINERY & ENGINEERING CO., Chicago, **Charles B. Tansley,** becomes executive vice-president, and **Robert A. Cole,** becomes vice-president.

**Don W. Blend,** elected a vice-president, Wolverine Tube Div., CALUMET & HECLA, INC., Chicago.

**Clair S. Reed,** elected vice-president, director and a member of the executive committee, United Metal Craft Co., Ypsilanti, Mich., subsidiary of GAR WOOD INDUSTRIES, INC.

**H. R. Greenley,** appointed vice-president and general sales manager, AIRWAY PRODUCTS, INC., Pontiac, Mich.

**Richard H. Turner,** elected vice-president in charge of all purchasing, UNITCAST CORP., Toledo.

**James H. McGraw, Jr.,** elected director, AMERICAN LOCOMOTIVE CO., Schenectady, N. Y.

**A. Harry Dahlhauser,** appointed director of research, WIRE SPECIALITIES CO., Santa Clara, Calif., a subsidiary of Keystone Steel & Wire Co.

**Luther Evans,** appointed to newly created position of director of industrial relations, THE DOW CHEMICAL CO., Midland, Mich.

**Thomas Rutherford,** elected director, ALLOY CASTING INSTITUTE, Long Island, N. Y.

**Leo A. Wise,** becomes director of purchasing, AMERICAN SAFETY RAZOR CORP., Brooklyn, N. Y.

**Fred C. Martin,** named comptroller, Dodge Div., CHRYSLER CORP., Detroit.

**Marvin A. Joy,** appointed director, Copper Div., National Production Authority, U. S. DEPT. OF COMMERCE.

**John H. Pugh,** named director of advertising and public relations, AXELSON MFG. CO., a division of Pressed Steel Car Co., Inc., Los Angeles.

**Dr. Michael Ference, Jr.,** appointed chief scientist, Ford Engineering Scientific Laboratory, FORD MOTOR CO., Dearborn, Mich.

**James J. Sherry, Jr.,** named assistant director of purchases, Buick Motor Div., GENERAL MOTORS CORP., Flint, Mich.

**Dr. John P. Howe,** appointed chief, Atomic Energy Research Dept., Reactor Materials Section, NORTH AMERICAN AVIATION, INC.; and **Dr. Robert L. Loftness,** becomes group leader, Chemical Development.

**Burton G. Ebbeson,** appointed field engineer, Worcester area, NORTON CO.; and **Charles M. Wellons,** becomes field engineer, Philadelphia.

**Theodore Jarvis,** promoted to assistant chief engineer, FORD INSTRUMENT CO., a division of Sperry Corp., Long Island City, N. Y.

**J. B. Froblom,** appointed sales engineer, JAMES H. KNAPP CO., Los Angeles.

**Ben Davies,** becomes ceramic engineer, Research Staff, HARBISON-WALKER REFRACTORIES CO.

**James W. Cameron,** named works engineer, Maple Grove, Ohio plant, BASIC REFRACTORIES INC.

**Earl J. Boyer,** named application engineer, SHEFFIELD CORP., Dayton.

GEORGE J. SCHAD, named president, Tinnerman Products, Inc., Cleveland.

SEWARD H. FRENCH, JR., named vice-president, Crucible Steel Co. of America, Pittsburgh.

PAUL B. BROWN, appointed vice-president and general manager, The Peninsular Grinding Wheel Co., Detroit.

## Personnel

**James H. Cogshall,** becomes sales engineer, Corrosion Engineering Products Dept., Philadelphia, PENNSYLVANIA SALT MFG. CO.

**James B. Duke,** made technical assistant to the general sales manager, ELASTIC STOP NUT CORP. OF AMERICA, Union, N. J.

**Harold O. Smith,** appointed general manager of operations, Salem and Warren, Ohio plants, MULLINS MFG. CORP.; and **A. F. Boone,** named assistant sales manager, Contract Div.; and **A. P. Schmauch,** becomes chief industrial engineer.

**Everett W. Lundy,** appointed assistant sales manager, Peerless Pump Div., FOOD MACHINERY & CHEMICAL CORP., Los Angeles.

**Calvin J. Timmins,** becomes member of sales force, J. ALEX GORDON & CO., Detroit.

**Fred A. Milnes,** appointed press specialist, HARRINGTON-WILSON-BROWN CO., Mt. Vernon, N. Y.

**Don H. Smith,** names sales promotion manager, Kaiser-Willys Sales Div., WILLYS MOTORS, INC., Toledo; and **R. E. Duffy, Jr., E. L. Anderson** and **Charles W. Grinstead,** appointed supervisors, southeast, Great Lakes and southwest regions.

**Dr. Kurt Peter Anderko,** appointed full research metallurgist, Armour Research Foundation, ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago.

**I. P. Payne,** appointed manager, Industrial Power Sales, Industrial Power Div., INTERNATIONAL HARVESTER CO.

**George S. Leonard,** promoted to works manager, THE NATIONAL SUPPLY CO., Houston, Texas.

**Donald E. De Canniere,** will supervise engineering work with bulldozers and cable controls, Engineering Dept., CATERPILLAR TRACTOR CO.; and **John A. Junck,** will supervise work on hydraulic controls and tool bars.

KENNETH O. SWANSON, appointed secretary, Sharon Steel Corp., Sharon, Pa.

F. J. DECRANE, becomes director of purchases. The Lamson & Sessions Co., Cleveland.

GEORGE S. LEONARD, promoted to works manager, The National Supply Co., Houston, Texas.

E. COURTNEY SORRELLS, appointed division superintendent of steel production, Gary Works, U. S. Steel Corp.


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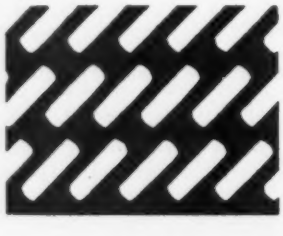

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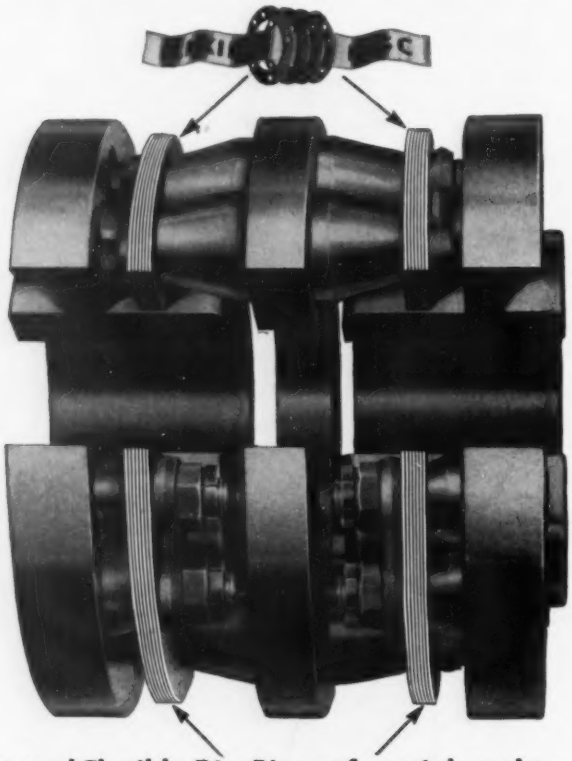

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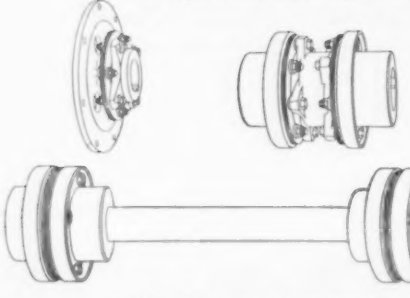

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## Personnel

*Continued*

**A. W. Morgan,** named general manufacturing manager, CONSOLIDATED VULTEE AIRCRAFT CORP., San Diego, Calif.; and **W. L. Young,** made works manager.

**P. C. Haldeman,** promoted to works manager, Foote Construction Equipt. Div., BLAW-KNOX CO., Pittsburgh, and **H. C. Stirling** becomes general superintendent, Rolls Div.

**M. J. Cauger,** promoted to assistant district sales manager, Chicago area, and placed in charge of Milwaukee office, REPUBLIC STEEL CORP.

**Jack C. Bever,** becomes district representative, FRANK G. HOUGH CO., Libertyville, Ill., and **Dwain Richey,** also becomes a district representative.

**George L. McCaffrey,** promoted to general purchasing agent, THE ELECTRIC AUTO-LITE CO., Toledo.

**Howard L. Wright,** becomes sales representative, Philadelphia area, southwestern New Jersey and easternmost Pennsylvania for HANSON-VAN WINKLE-MUNNING CO.

**Gilbert Sherman,** appointed electronic tube sales representative, Pacific Coast area, WESTINGHOUSE ELECTRIC CORP.

**Harry C. Fleming, Jr.,** appointed representative, Youngstown area, JONES & LAUGHLIN STEEL CORP., Warehouse Div.

**John C. Bradford,** appointed assistant to the superintendent of manufacturing, PLUME & ATWOOD MFG. CO., Waterbury, Conn., Fabricating Div.

**William E. Johnson,** appointed district representative, Cleveland area, GISHOLT MACHINE CO.

### OBITUARIES

**Albert A. Teeter, 65,** retired vice-president and director, Chas. Pfizer & Co., Inc., at his home in Rumson, N. J.

**Henry W. Bartling, 60,** application engineer in charge of the metal industry group, Allis-Chalmers Mfg. Co., Motor and Generator Section, recently.

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Technical Articles

*Reduces hand work—*

# BETTER TUMBLING METHODS CUT PARTS FINISHING COSTS

**PART I**

By Wayne Stone
Process Engineer
Bridgeport-Lycoming Div.
Avco Mfg. Corp.
Stratford, Conn.

◆ Outstanding reductions in burring and bench finishing costs have been achieved by Bridgeport-Lycoming through systematic application of improved tumbling methods . . . Key to success of the operation is its careful integration with other manufacturing operations.

◆ Topmost in successfully rolling precision machined parts is the exacting combination of granite chips, abrasives, and compounds for each particular job . . . Add close timing and special attention to cleanliness and the process permits handsome cost savings.

◆ Parts range from very small to very large in soft to hard metals . . . Complex and closely machined surfaces have been successfully worked . . . Uniformity of radii and general improvement of microinch finish are attained . . . The rolled surface aids plating and painting processes, is more oil adhesive.

◆ FINISHING parts by rotating in machines—generally referred to as tumbling and rolling—has made rapid strides as a manufacturing process during the past 20 years. Modern tumbling or rolling procedures are vastly different from the wet tumble rolling of the past however. Beginning with World War II the need for greater production encouraged experimentation and produced many new and unusual applications. Present rolling processes have helped management make impressive cuts in high finishing costs resulting from tedious and costly hand burring while further improving product quality.

At Bridgeport-Lycoming Div. of Avco Mfg. Corp., Stratford, Conn., many unique tumbling applications have been made. Parts are rolled to remove flash and hangers from forgings and castings, and remove rust and heat treat scale. In addition burrs and round corners are removed and sharp edges broken to exacting blueprint requirements on both soft and hard materials. Uniformity of radii formed and general improvement of microinch finish have been highly satisfactory. Also, the "rolled" surface is a definite aid to plating and painting processes as well as being more oil adhesive.

At Bridgeport-Lycoming about 50 pct of all precision aviation engine parts are rolled. This figure includes subcontracted parts. Of precision parts machined at the Bridgeport-Lycoming plant, the percentage rolled may run as high as 75 pct. A wide variety of parts of many different materials, sizes, shapes and weights and at different stages of manufacture are included. Some parts are rolled three and four times in the course of manufacture. Parts range from a steel valve tappet guide roller, Rc 60 to 65, which requires an edge break of 0.010 to 0.020 in. radius, to an aluminum diffuser plate with thin vanes and exacting requirements both dimensionally and in surface finish.

The Roto-Tumbling program has been fortunate in that management saw early advantages of the process and the program was

instituted along with the other manufacturing processes. As the plant grew and production increased, tumbling applications multiplied. Now, in addition to roll finishing many small parts and gears, we have also, through careful experimentation, been able to successfully roll large intricate major parts.

It is not necessary to completely deburr or form all radii in order to show a saving with rolling. The method is not a "cure all" for all deburring or polishing problems but is a valuable adjunct to existing manufacturing processes. In any rolling program, the important factor to keep in mind is that loading and unloading time is the only man-hour cost involved.

The machines used were built by the Roto-Finish Co. of Kalamazoo, Mich., are 8-sided metal barrels divided in two, three or four neoprene-lined compartments. The two-compartment machine has 18 cu ft to each compartment; the three-compartment machine has 12 cu ft to each compartment; the four-compartment machine has 9 cu ft to each compartment.

A commercial granite chip has proved satisfactory and flexible. This chip, in various formulas, has been applied to most parts. Limestone chip and steel burnishing balls are used for specialized requirements. In addition, various chemical compounds are used. No one compound achieves satisfactory results in all operations. Correct application of the compound best suited to produce the desired results is important.

Compounds in general furnish lubrication for the chip mass and parts being processed and prevent tarnishing, etching or rusting of parts. They maintain cleanliness in the compartment and chip mass, provide the abrasive necessary for a desired result and can be used to prevent chips from becoming glazed or loaded with fine metal abraded particles. Many compounds contain water softeners which take care of the hardness of the water used.

Compounds used at Bridgeport-Lycoming range from highly alkaline to non-alkaline, harshly abrasive to non-abrasive, acid to acid neutralizer. These extremes are blended to attain the desired result from rough scale and flash removal through precision deburring and radii forming to high luster finish polishing.

Results achieved in modern roll finishing depend mainly upon how exactly the media

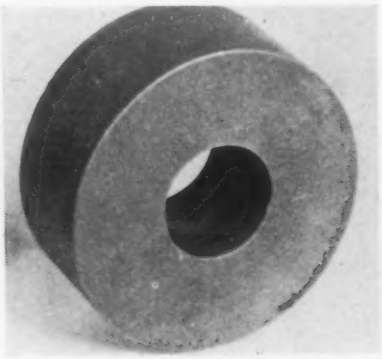


FIG. 1—Steel bushing cut from 2 1/8 in. bar, tumbled after heat treat and grind, is simple rolling job.

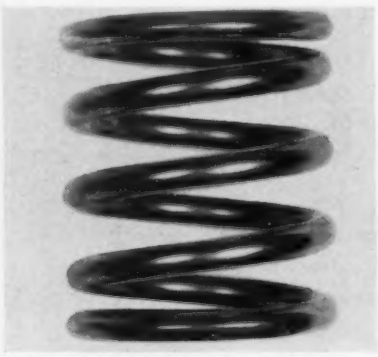


FIG. 2—Heat treat scale, discoloration are removed, and springs are polished in rolling operation.

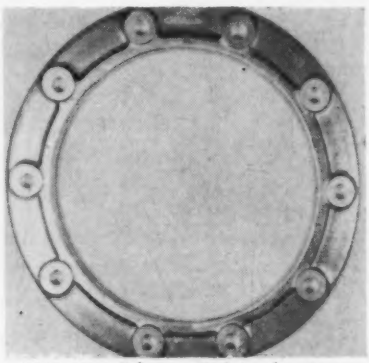


FIG. 3—Edges of this aluminum forging have been broken and surfaces prepared for painting.

FIG. 4—Some parts such as this aluminum diecasting, are rolled only to improve appearance.

FIG. 5—Steel forging, about 4 in. in diam, was successfully rolled despite many curves.

FIG. 6—Some hand burring must be done prior to rolling of this drilled steel spacer.

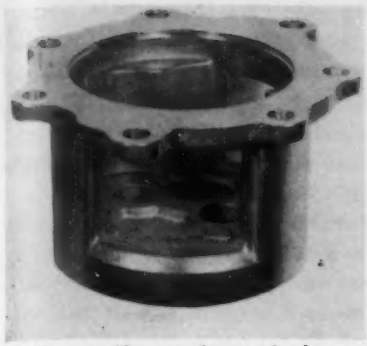


FIG. 7—Twenty-five of these aluminum pump bodies are processed at one time. Shown after rolling.

FIG. 8 — Tumbling of crankcheek screw saved 97.2 pct over previous finishing methods.

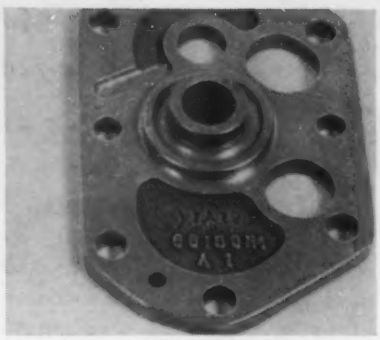


FIG. 9—Close tolerances on this machined magnesium plate were not affected by tumbling.

formula fits the requirements of the job at hand. The compound can "make or break" the operation. For instance, the proper compound to use for attaining a polished finish on aluminum would produce no appreciable result in rust and scale removal on steel forgings. Use of a scale remover compound on aluminum would be disastrous.

Generally, the mass used in each compartment is from ½ to ⅔ of compartment capacity. This is adjusted to suit the type of part being processed. With rough forgings or castings a smaller mass is used to get greater action. However, in processing finished parts of soft metal and perhaps having thin sections a much larger, milder acting mass is demanded.

Chip sizes will vary with the size, shape, size of holes or cavities, type of metal, stage of manufacture and surface finish desired.

Once the correct formula has been established, three major factors are involved in successful processing.

1. Maintenance of proper chip size is of prime importance. Even though commercial granite wears well, the individual chip size is reduced through use. Chips are frequently and carefully screened, graded and stored according to their respective size. Frequency of this screening depends upon the type of operation. In operations of exacting requirements the chip mass is screened after each run.

2. Chip cleanliness is important. Thorough rinsing of the working media and flushing out of the machine to remove all foreign or refuse matter is necessary.

3. Extreme care must be used in handling precision machined parts.

Examples of successful tumbling operations at Bridgeport-Lycoming have been chosen to represent different types of parts rolling.

Fig. 1 shows a simple bushing machined from 2⅛ in. steel bar stock. Thickness is approximately ⅝ in. and the hole about 1¼ in. Before rolling, the part is completely machined, hardened and ground. The process rounds edges and improves inside and outside finish. Part is run 1 hour, 250 to a compartment, in a two-compartment machine using 1000 lb of No. 4 granite chips.

The steel wire spring, Fig. 2, is successfully rolled without disturbing spring quality. The part is about 1⅜ in. in diam by 1⅝ in. long, and is purchased semifinished. Rolling removes heat treat scale, discoloration and polishes the part. Springs are processed 1500 to the compartment in a two-compartment machine, using 1000 lb of No. 4 chips in a two-cycle operation.

First cycle is 1 hour using a scale removal

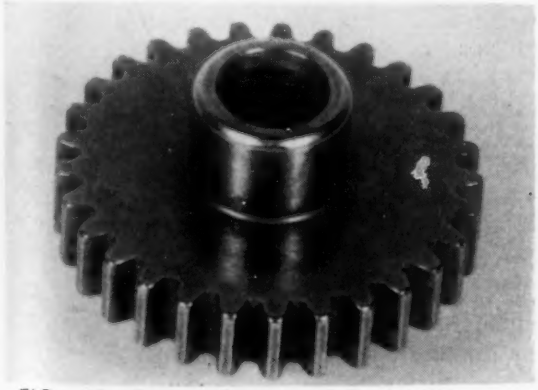


FIG. 10—Five rolling operations were performed on this gear to attain desired results.

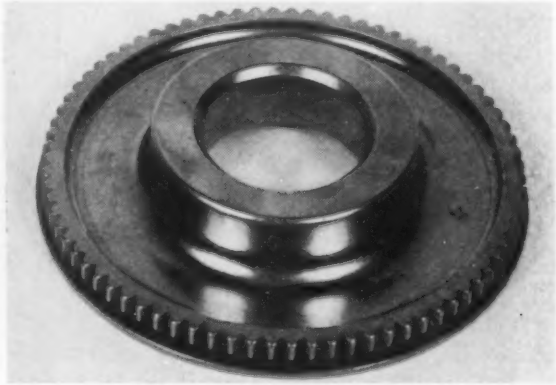


FIG. 11—Splined clutch has been rolled once to remove scale, and again to form radii.

***Important savings in finishing costs have resulted from tumbling of precision parts . . .***

compound. Second cycle runs 30 min using the same chip mass but rinsing out and changing to a burnishing compound. After tumbling the part is shot peened and coated. Formerly an abrasive blast was used on this part with a standard of 0.15 min per piece. Rolling resulted in a saving of 0.10 min per piece.

The aluminum alloy forging, Fig. 3, is processed for edge break and to prepare the surface for paint. After the 10-in. diam spacer is machined on both sides and ten holes are drilled and reamed, it is run for 1 hr in a two-compartment machine. Fifty pieces make a load, using 800 lb of No. 4 granite chips. Saving amounted to 96 pct of burring time and part surface was improved.

### Tumbled for appearance

Roll finishing of aviation engine parts differs from usual commercial rolling operation. While commercial salability requires high luster, processing of engine parts places emphasis on the controlled forming of radii and edge breaks. However, some parts are processed to improve appearance in addition to edge rounding.

Fig. 4, an aluminum diecasting, is rolled mainly for appearance. The part is about 3 x 7 in., worked 100 per compartment in a three-compartment machine. Time is 1 hour in 800 lb of No. 4 chips using a burnishing compound.

One of the more intricate small parts successfully rolled is shown in Fig. 5. It is a steel forging, machined and ground to a very close dimensional tolerance. Edges and surfaces requiring action present themselves at a number of odd angles and positions.

This part, approximately 4 in. in diam, is rolled five times, the final time being to "polish and blend" after the part is completely finished. A general improvement in quality and uniformity plus an overall saving of 41.6 pct of previous finishing time was possible.

The steel spacer, Fig. 6, about 5 in. in diam x 2⅜ in., shows a limitation of the method. The overall break edge required is 0.003 to 0.015 in. If the piece were processed with the edges of the holes sharp it is possible the edges of the 7/32-in. holes could be broken to 0.003 in. at least at the OD end.

However, in the time required to accomplish this break, the outer edges of the piece, subjected to much more action than the hole edges, would receive a break in excess of 0.015 in. Therefore, it is necessary to burr and break the ID edges and rough break OD edges of the holes before processing. Also, ID grooves must be rough broken. Outer edges are left sharp. Rolling blends the rough breaks and forms the required radius on the outer edges.

Saving on this piece amounted to 15.9 pct of the previous burring time. Running time is 2 hours in a mass made up of 400 lb of No. 3 chips, 300 lb of No. 5 chips, and 200 lb of No. 7 chips. Parts are processed 10 to a compartment in a two-compartment machine. Saving percentages on this part are relatively small. If this were the only part of this type processed, rolling would not be practical unless production quantities were very high. However, with many such parts in an all-inclusive roll finishing program, the cost picture becomes more feasible for parts having similar limitations.

### Suit compound to metal

Both magnesium and aluminum parts may be very successfully rolled if the proper formula is established. Both metals react violently to the improper combination of chemicals. If rolling of metals is contemplated, specific information should be received from the compound manufacturer.

The aluminum pump body, Fig. 7, rolled twice during manufacture, is shown at first processing. The part has been rough machined and is rolled to burr and break sharp edges. After finish machining it is again rolled to finish burr and break edges 0.003 to 0.015 in. Twenty-five parts, approximately 4 in. in diam x 2½ in. are processed in a two-compartment machine with 400 lb of No. 4 granite chips for 1 hour. Resultant saving is 65.8 pct of replaced burring time.

Although certain materials are more easily rolled than others, rolling does not play favorite in terms of saving to any particular material or part. The crankshaft screw, shown in Fig. 8, is Roto-Tumbled twice with a saving of 97.2 pct over previous sand blast and bench time. First rolling is after rough machining, harden and draw.

### No reduction in thread OD

Fifty at a time are run in a two-compartment machine. After the part is completely machined, ground, the shank lapped and the thread rolled, it is again rolled. Three are run to a compartment in a four-compartment machine. In both operations, mass is 800 lb of No. 3 granite chips with compounds to suit. No reduction in thread OD is experienced and microinch finish on the shank is considerably improved while removing grinding burrs and edges.

The magnesium plate, Fig. 9, is highly machined. Hole sizes and center distances have exacting tolerances. It is rolled at two different points during manufacture with a saving of 97.6 pct. This part is processed 100 at a time in 800 lb of No. 4 granite chips for 1 hour.

Successful rolling of gears presents several problems. Breaking of edges at the root of the gear tooth is always a problem. In some cases, where the tooth is large enough and the difference between the break required at the root and that specified at the top of the booth is great enough, tumbling can accomplish the entire operation. More often some hand or machine burring is needed to prebreak the edge at the root. No difficulty has been experienced in so far as change in size or tooth form is concerned. Teeth are not affected in this way nor are close dimensions or tapers changed.

Due to the many machining operations required on gears, there are several points during manufacture where tumbling has been advantageous. The gear, Fig. 10, is rolled twice to remove heat treat scale and three times to burr and form radii. The piece is approximately 1¾ in. in diam and has 29 teeth.

This gear is run 100 to the compartment in a four-compartment machine. Total saving realized as against previous methods is 94.1 pct.

The splined clutch, Fig. 11, is processed twice. The first rolling operation removes heat treat scale. After the piece is completely finished it is gain rolled to form radii to 0.015 to 0.020 in. To achieve this amount of edge break on a part approximately 4 in. in diam and having 78 spline teeth required a special formula.

At the first rolling parts are processed in a three-compartment machine, 200 to the compartment for 1 hour. The second rolling is also 1 hour, with 60 per compartment. The media used are 400 lb of No. 2 chips, 200 lb of fine abrasive and 4 lb of alkaline compound. The No. 2 chips act as a pusher for the fine abrasive and keeps the parts separated. Thus it is possible to completely blend a partially formed 0.015 to 0.020 in. radius edge break while running the pieces "loose." Saving on this part amounted to 66.5 pct.

Gears with tapped holes can be successfully rolled without damage to threads when the process is properly applied. A chrome moly steel master rod forging, Fig. 12, is rolled in the early stages of machining. The piece is processed "loose" in the mass, one piece to a compartment in a four-compartment machine. Later, when the part has been finish machined, it will be processed in a fixture machine. The first rolling operation removes rust and scale. Running time is 1 hour in 400 lb of No. 2 and 200 lb of No. 7 chips with a scale remover compound. This is followed by a rinsing of the mass, change of compound to neutralize and a second run of one half hour.

The second rolling, after the piece has been completely rough machined, burrs and breaks sharp edges 0.003 to 0.015 in. Run is 1 hour in 500 lb of No. 2 chips and compound to suit. Since the part is approximately 19 in. long and 9 in. at the widest point and quite heavy it is impractical to run more than one to a compartment. In terms of machine load this means four to a machine using a four-compartment machine.

When the part is fixture-rolled after finish machining four will be run at a time. Previous burring time on the two operations thus far partially replaced was 16.60 minutes per piece. By rolling, a saving of 11 minutes per piece has been possible.

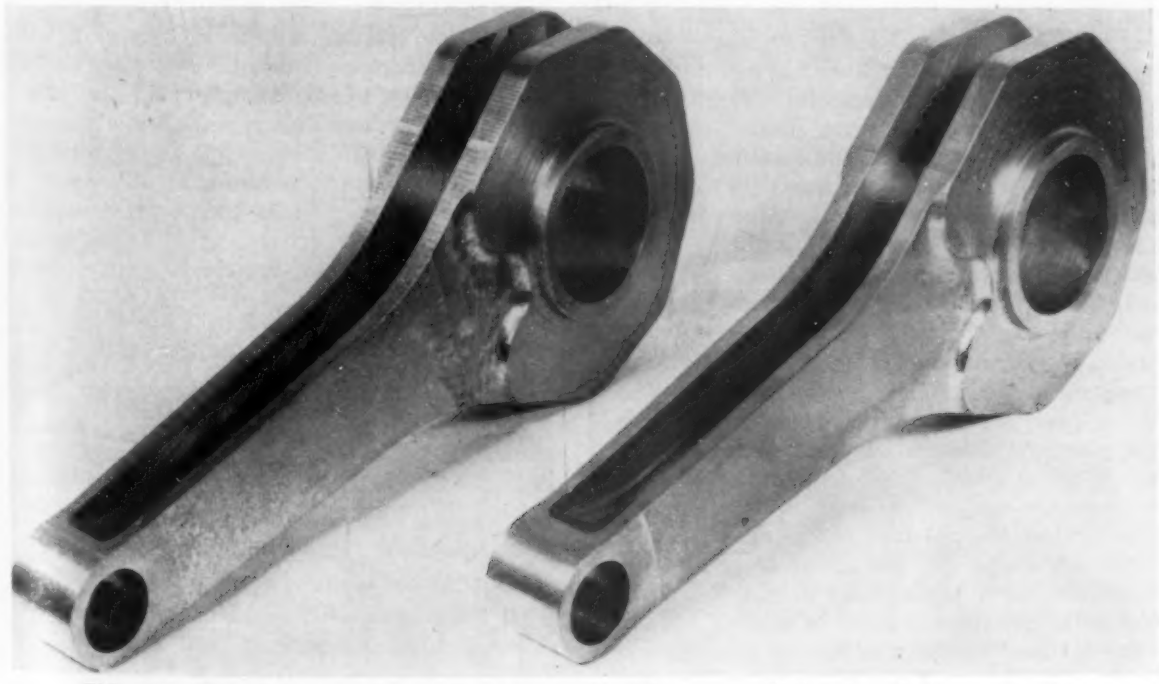


FIG. 12—This chrome moly steel master rod, right, was rolled twice during processing.

*System scours sand—*

# Low-Cost Unit Reclaims Foundry Sand

By Don Rosenblatt, Foundry Metallurgist
Bob Thompson, Co-engineer
American Foundry & Machine Co.
Salt Lake City

◆ Hauling 150 tons of sand from Illinois to a Utah foundry was quite costly—so much so that the foundry decided to build its own sand reclamation system . . . Space occupied by the system is a 14 x 14-ft area, 2½ stories high.

◆ Scouring action of an agitator on a slurry containing 30 pct solids removes carbonaceous deposits from the sand grains . . . Weight of solids discharged in slime is only 50 lb per ton of sand . . . Savings with the system are about 80 to 85 pct.

◆ UTAH SAND is generally not suitable for casting. When the foundry is located in Salt Lake City, as is the American Foundry & Machine Co., one alternative was to import sand from another state—in this case from Illinois. Haulage became a major expense item and was the principle reason for seeking an efficient, inexpensive system of sand reclamation.

The foundry occupies about 120,000 sq ft of floor space, and produces 500 tons of alloy steel and 75 tons of gray iron castings per month. For this volume of castings, about 150 tons of sand must be introduced into the system monthly.

In 1951, after considerable investigation, the company came up with what seemed the best solution. It designed, built and installed its own sand plant. Operations were started the following year. At first, the system, shown in the operating diagram in Fig. 1, had some "operating bugs" but these have since been eliminated. The compact, low-cost unit has proven that the ideas incorporated into it were sound.

Sand is moved from the hopper by a vibrating conveyor, shown in Fig. 2, which controls the rate of feed. A conical wetting pan between the feeder and the Deveraux-type agitators reduces the amount of splash. These 4-ft deep x 6-ft diam agitators are equipped with 24-in. impellers and four vertical channel iron baffles on the walls. Water introduced into the agitators produces a slurry of about 30 pct solids by weight. Retention time in the agitators is about 30 min.

The agitator produces an intense scouring action on the grain surfaces which removes baked carbonaceous and dead bond deposits, and separates the agglomerated compounded sand grains. The effect of this scouring action is shown by the micrographs in Fig. 3.

Overflow from the second agitator is elevated by either of two, one a standby, 2-in. Denver Equipment sand pumps and discharged to a 12-in. x 12-in. x 2-ft head box. This box accommodates slight surges from the agitators and pumps. The surge box then discharges into a 10-in. centriclone which makes a sand slime separation as listed in Table I.

The slime fraction is discharged as waste with no further treatment other than in a 4 x 4 x 2-ft baffled trap box to stop tramp sand. To produce a slurry with greater dispersion and a slower settling rate than this slime would be very difficult. Moreover, the weight of solids so discharged is less than 50 lb per ton of sand treated—a very small amount.

The underflow of the centriclone carries about

TABLE I
**SAND SLIME SEPARATION**

| Screen Mesh Size | Feed and Weight Retained, pct | Underflow Weight Retained, pct | Overflow Slime Retained, pct |
|---|---|---|---|
| 6 | 0 | 0 | 0 |
| 12 | .2 | 0 | 0 |
| 20 | .4 | .5 | 0 |
| 30 | 11.9 | 9.5 | 1.5 |
| 40 | 33.2 | 36.2 | 2.6 |
| 50 | 21.6 | 27.9 | 5.1 |
| 70 | 16.0 | 15.1 | 6.0 |
| 100 | 9.1 | 10.0 | 5.6 |
| 140 | 2.5 | .8 | 24.5 |
| 200 | 1.5 | 0 | 16.2 |
| 270 | 1.6 | 0 | 18.2 |
| PAN | 2.0 | 0 | 20.3 |

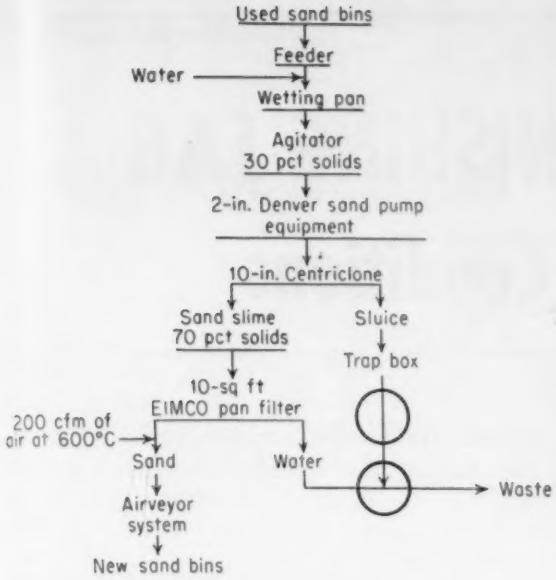



FIG. 1—Operating diagram of sand plant shows the order of essential processing steps for reclaiming sand. This system is saving 80 to 85 pct of original costs.

FIG. 2—Start of the cleaning process is at the hopper (1) where a vibrating feeder (2) moves sand into agitator (3) which produces an intense scouring action.

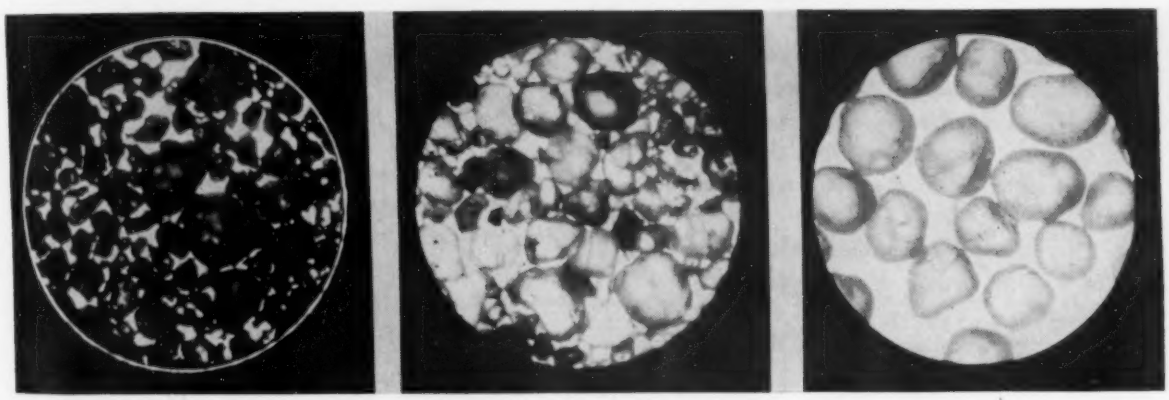


FIG. 3—Effectiveness of sand reclamation system is told by these micrographs. Left, condition of sand as received. After use, sand from molds (center) contains carbonaceous and dead bond deposits which are completely removed by cleaning (right).

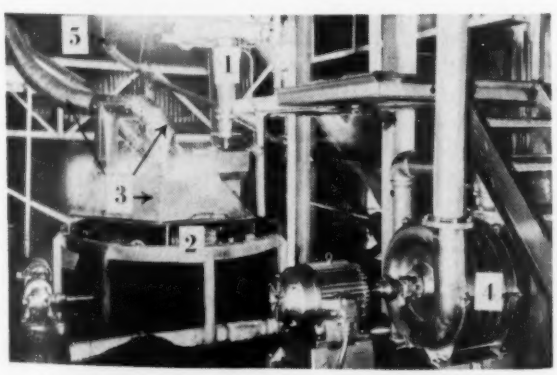



FIG. 4—Centriclone (1) makes sand slime separation, slime fraction of which is discharged as waste through piping (5). Underflow of centriclone, carrying about 70 pct solids, is fed directly to pan filter (2). Exhauster (4) draws air through hood and ducts (3) in evaporating residual moisture.

70 pct solids and is fed directly to an Eimco 10-sq ft rotary pan filter which is shown in Fig. 4. The filter is driven by a ½ hp speed reducer geared motor. The filter media is a 60-mesh stainless steel screen. Vacuum for the filter is produced by a Hoffman exhauster which draws 200 cfm of air at 6 in. of mercury. Water is drawn off and air, at 600°C supplied through the hood and ducts, is drawn through the filter cake to evaporate residual surface moisture.

Hot air is supplied by a gas-fired Maxon heating unit capable of producing 400,000 Btu per hr. The heated, partially dried sand is automatically dumped from the filter pans and cooled, allowing further drying by falling to a sand box through a rising column of air. From the sand box, it is conveyed by an air conveyor system to the new sand bins. Total space occupied by this plant is a room 14 ft wide x 14 ft long x 2½ floors high.

*Flexible setup—*

# NEW METAL FINISHING LAB Duplicates Plant Conditions

By W. G. Patton
Asst. Technical Editor

◆ New research facilities recently completed by Wyandotte Chemicals Corp. permit full-scale investigation of metal finishing operations . . . Both spray and immersion-type cleaning and plating of many full-sized parts are performed.

◆Flexibility of construction materials and design enables a wide variety of plant conditions to be duplicated . . . Spray washing equipment is unusual in that units of a 6-stage machine are interchangeable.

◆ INDUSTRIAL experience in metal cleaning frequently shows a wide gap between the results of small scale laboratory cleaning tests and those obtained from day to day in metal finishing plants. The new, unusually flexible metal finishing, cleaning and plating laboratories recently completed by Wyandotte Chemicals Corp. furnishes facilities to narrow the gap between laboratory and plant conditions. The setup permits nearly full-scale investigation of metal finishing operations with great flexibility and permits scientific investigation of industry's metal cleaning problems without interruption of production.

Facilities in the laboratory permit both spray and immersion type cleaning and plating of many full-sized parts. Operations can be carried out under near production conditions. Flexibility of construction materials and design of facilities affords a virtually unlimited range of cleaning and plating cycles. Spray washing equipment is unique in that units of the 6-stage machine are movable and can be interchanged.

In designing the pilot installation, extreme flexibility was of prime importance in order to duplicate plants conditions throughout the country. The floor plan, Fig. 1, shows the arrangement of plating and cleaning tanks and the multi-unit spray washer. The table on p. 125 shows details of construction. Fig. 2 shows the arrangement of the longer rows of tanks. Cleaning tests are also conducted on the shorter row.

Solutions can be filtered by means of a portable pump and filter or transferred from one tank to another by means of a plastic pump constructed of furane resin. Background, Fig. 2, shows a standard type salt spray cabinet.

### Conveyor speeds varied

The rest of the pilot room is occupied by the m 6-stage spray washing machine, Fig. 3. Here the general arrangement of the machine is seen with the 70 gal solution tanks on the aisle side for easy access. Steam for heating the tanks of solution from room temperature to 180°F is supplied by lines from the basement. Multi-tube coils are used. A maximum solution pressure of 60 psi is supplied by 5 or 7½-hp motors connected to the proper type of pump.

Pressure to the 22 spray nozzles may be controlled at a steady state in the pressure range indicated by manipulation of the two valves which are shown tagged in the lower left hand corner of Fig. 3. Temperature variation is held within close limits by the control units seen in a line along the upper middle section of Fig. 3. Easy filling of solution tanks is accomplished by removing the small two-handled covers as shown at the left-hand side of the operator in Fig. 3. The use of a large sized piping and valves at the front of the machine permits rapid dumping of the tanks and preparation of new solutions. The overhead conveyor can be varied in speed from about 1.25 to 12 fpm, providing a wide range of contact time for parts in the sprays of any given section.

Another factor contributing to extreme flexibility is the fact that each stage is entirely independent of the others. In the lower part of Fig. 3 is shown a series of triangular shaped rails

# THE IRON AGE SUMMARY...

- **Fresh scrap declines may turn retreat into rout**
- **This is the eighth consecutive week of declines**
- **Ingot rate bounces back with end of little strike**

**Fresh declines** in steel scrap prices threaten to turn the steady retreat of recent weeks into a rout. How far prices might tumble before they hit bottom (and perhaps bounce back a bit) is anybody's guess. Some in the trade have already taken a shellacking.

Falling prices this week lowered The Iron Age Steel Scrap Composite Prices $1.84 a ton to $35.33 per gross ton. The composite is based on the average prices of heavy melting steel at Pittsburgh, Chicago and Philadelphia.

**Scrap prices have fallen** for 8 consecutive weeks since the market hit its high for the year ($44.92) July 28. Declines during the severe shakeout now total about $10 a ton, more on some grades.

This sinking spiral is worrying a lot of people who have come to regard scrap prices as a bellwether of future steel business. Of course the steel industry in turn reflects business prospects of its customers.

**Truth** is that scrap prices do tend to indicate future steel business, as they did in 1949 and 1950, pointing first to a decline in steel business followed by a strong revival.

But scrap prices are so highly volatile they sometimes reflect no more than corrections in relationship between supply and demand within the scrap industry itself. Wild price gyrations in the "circus" market of 1947 for example were not reflected in the steel industry which plodded along at a fairly steady pace.

**Business forecasting,** even on the basis of many factors, is an uncertain business. On the basis of scrap prices alone, it is little short of sheer folly.

Current declines in scrap prices seem only to indicate the fourth quarter decline in steel that was predicted early this year. It has already been signalled by (1) end of conversion, (2) declining premium prices, and (3) slowing of new orders on some steel items.

**Nineteen fifty-three** will be remembered by some as the year when steel officials were right in their prediction of the market. Early in the year a number of them foresaw decline in the fourth quarter. Consensus was that modernization programs had put their plants in good shape to meet competition and they wouldn't be hurt much by the "moderate" decline.

Now some of them are genuinely concerned over the effect of "recession" talk on their customers and on potential investors in steel stocks. Last week industry spokesmen assured the public that: (1) Business in the second half would be good; (2) Earnings might be almost as high as the first half; (3) Steel plants were not built to operate at 100 pct of capacity; (4) Moderately lower operations will result in some economies.

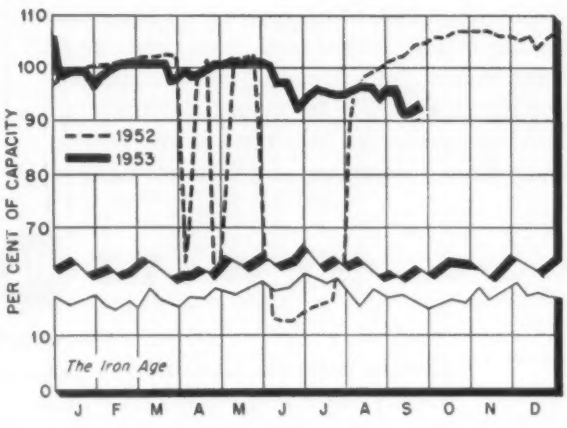
**Reason for such reassurance** is that steel producers must continue to attract equity capital to finance expansion and modernization of plants. They have always fought a hard battle to attract investors' money and when business falls off slightly many investors become wary of steel stocks.

The steel ingot rate rebounded to 94.0 pct of capacity with end of the Bethlehem strike.

## Steel Operating Rates

| | Week of Sept 20 | Week of Sept. 13 | | Week of Sept 20 | Week of Sept. 13 |
|---|---|---|---|---|---|
| Pittsburgh | 97.0 | 95.0* | Detroit | 99.0 | 100.0* |
| Chicago | 99.5 | 100.5 | Birmingham | 96.5 | 96.5 |
| Philadelphia | 96.0 | 97.0 | Wheeling | 98.0 | 100.0 |
| Valley | 95.0 | 96.0* | S. Ohio River | 80.0 | 82.0 |
| West | 99.5 | 102.0* | St. Louis | 89.0 | 95.0 |
| Cleveland | 96.0 | 95.0* | East | 85.5 | 80.0* |
| Buffalo | 91.0 | 31.0* | **AGGREGATE** | **94.0** | **91.5*** |

Beginning Jan. 1, 1953, operations are based on annual capacity of 117,522,470 net tons.
* Revised.






STEEL OUTLOOK — STEEL OUTLOOK — STEEL OUTLOOK — STEEL OUTLOOK

# UNLOADED 3,207,708 TONS AND NEVER MISSED A DAY

**EQUIPMENT:** Hewitt-Robins Heavy Duty Car Shakeout.

**LOCATION:** Bradford Dock of the Carbon Fuel Company, Kanawaha River, Marmet, West Virginia.

**OPERATION:** Unloading coal from hopper cars.

**PERFORMANCE:** This Hewitt-Robins Heavy Duty Car Shakeout unloaded approximately 50 cars a day, every day for 6½ years without missing a complete day . . . unloaded a total tonnage of 3,207,708 tons . . . average unloading time of 2½ minutes per car under normal conditions (even partially frozen coal unloaded in 10 minutes). During this period of operation, the Car Shakeout has never been torn down and the original shaft, bearings and vibrator assembly are still intact . . . only maintenance required was replacement of V-belts and springs.

**RESULTS:** The Carbon Fuel Company reports that this unit has paid for itself *many times over in man-hours saving alone.* Now only four men are needed to handle car unloading operations at the dock . . . whereas six to eight men were normally required before the Hewitt-Robins Heavy Duty Car Shakeout was installed.

*For complete information about Hewitt-Robins Car Shakeouts . . . 5-ton HD (Heavy-Duty), 3½-ton GS (General Service) . . . write to Hewitt-Robins Inc., 666 Glenbrook Road, Stamford, Conn.*

**HEWITT HR ROBINS**

**Executive Offices, Stamford, Connecticut**

**DOMESTIC DIVISIONS:** Hewitt Rubber • Robins Conveyors • Robins Engineers • Restfoam

**FOREIGN SUBSIDIARIES:** Hewitt-Robins (Canada) Ltd., Montreal • Hewitt-Robins Internationale, Paris, France • Robins Conveyors (S. A.) Ltd., Johannesburg • EXPORT DEPARTMENT: New York City.

# Markets at a Glance

**Pig Iron Cheaper . . .** Alan Wood Steel Co. has cut $2 from the price of pig iron. New levels, effective Sept. 14, are: Basic, $58.00; foundry, $58.50; malleable, $59.00; and bessemer, $59.50. Prices are per gross ton f.o.b. Swedeland, Pa. The action resulted from slack pig iron demand and makes Alan Wood competitive with others in the area. Reflecting this change, THE IRON AGE Pig Iron Composite Price is now $56.59 per gross ton as compared to the earlier $56.76.

**Plastics Dip . . .** Despite scattered reports of a business drop of up to 10 pct in recent weeks, the industry is confident this is just a temporary slump. Where sales dips cropped up, they appeared to reflect decreased demand from appliance manufacturers and, to a lesser extent, makers of electronic equipment.

**Enters Electronics Field . . .** Thompson Products, Cleveland, is financing a new West Coast electronics firm, Ramo-Woolridge Corp., Los Angeles. The new concern will specialize in research, development and manufacture of guided missiles, radar, computers, electronic controls and automatic intelligence devices.

**U. K. Ups Car Output . . .** British auto production has hit a new high as the industry is turning out almost five cars per minute of working time. Weekly average output during July was 13,200 cars. Exports of British automobiles are also rising and were valued at $30,520,000 in July. Britain is also making a new bid for the small-car market, as the Standard works, Coventry, has just produced a new 4-cylinder auto. Base price $949.20. Production by the end of year will be 1000 cars per week. At least half the output is for export.

**Grant Tax Writeoff Certificates . . .** In the 2 weeks from Aug. 27 through Sept. 9, Office of Defense Mobilization issued certificates of necessity for $39,020,049 for 81 new or expanded facilities. Largest single certificate, $8.5 million, was issued to Tennessee Coal & Iron Div., U. S. Steel Corp. Fairfield, Ala.

**Add Lead-Bearing Alloy Steels . . .** Joseph T. Ryerson & Son, Inc., has added two qualities of lead-bearing alloy steels to its list of items available from stock. One of the new steels, leaded 4140, is the same as standard AISI 4140 except that 0.15 to 0.35 pct lead has been added. In the low carbon, carburizing alloy field, Ryerson is now offering lead-bearing AISI 8620.

**Lackawanna Strike Ends . . .** Lackawanna plant of Bethlehem Steel was back in production last week. Wildcat strike in the company's coke oven department came to an end when United Steel Workers head David McDonald ordered the men back to work. Bethlehem hoped that it would be operating near 91 pct of capacity this week.

**Steelworkers Set Earnings Record . . .** Steel industry established several new wage records during July, reports American Iron and Steel Institute. Steelworker's hourly earnings averaged $2.31 in July, first full month on the new wage scale, compared with $2.263 in June. July average was slightly more than double the annual average of 10 years ago ($1.14 per hour). Estimated payroll of the industry was $288,052,000, another record, and nearly $6 million more than in June. Estimated total employment also was at a new high.

**Will Make Silica Brick . . .** Harbison-Walker Refractories Co. will begin producing silica brick at its Warm Springs, Calif., plant. Previously the plant produced only basic refractories.

**Get Ammo Box Contract . . .** Follansbee Steel Corp. has been awarded a $1.7 million contract to produce more than 1 million 50-cal ammunition boxes. The boxes will be made at the company's sheet metal specialty plant at Follansbee, W. Va.

## Prices At A Glance

*(cents per lb unless otherwise noted)*

| Composite Prices | This Week | Last Week | Month Ago | Year Ago |
|---|---|---|---|---|
| Finished Steel, base | 4.634 | 4.634 | 4.634 | 4.376 |
| Pig Iron (gross ton) | $56.59 | $56.59 | $56.76 | $55.26 |
| Scrap, No. 1 hvy. (gross ton) | $35.33 | $37.17 | $41.67 | $42.00 |
| **Nonferrous Metals** | | | | |
| Aluminum, ingot | 21.50 | 21.50 | 21.50 | 20.00 |
| Copper, electrolytic | 29.50 | 29.50 | 29.50 | 24.50 |
| Lead, St. Louis | 13.30 | 13.80 | 13.80 | 15.80 |
| Magnesium, ingot | 27.00 | 27.00 | 27.00 | 24.50 |
| Nickel, electrolytic | 63.08 | 63.08 | 63.08 | 59.58 |
| Tin, Straits, N. Y. | 81.50 | 81.12 | 82.25 | $1.21½ |
| Zinc, E. St. Louis | 10.00 | 10.00 | 11.00 | 13.75 |

# Copper Shipments Show Further Drop

**August deliveries to fabricators dip about 20,000 tons . . . Stocks held outside U. S. rise 42,790 tons . . . No news yet on U. S.-Chilean copper negotiations—by *R. L. Hatschek***

The copper market remains quiet with fair quantities of metal moving. But at presstime there was still no word of the conclusion of U. S.-Chilean negotiations. Talks are still in progress but there's no hint as to when they may come to an end.

Meanwhile, Copper Institute statistics covering the industry through August show some interesting comparisons. Refined stocks held by producers outside the U. S. stand at 209,220 tons, an increase of 42,790 tons. This increase is even more than can be accounted for by the growth of the Chilean surplus.

**Shipments Dip Again . . .** Combined total of deliveries to fabricators by members both in and outside the U. S. was 150,893 tons, compared to 172,817 tons in July, and 213,718 tons in June. Shipments outside the U. S. showed the real drop, with domestic shipments a bit higher in August.

Primary production was off a bit from the preceding month. Domestic refined output, on the other hand, totaled only 106,749 tons in August. The July figure was 112,570, and the June total was 124,480 tons. Outside the U. S., this total climbed from 84,369 tons in July to 90,340 tons in August.

**Lead Price Dips . . .** Weakness in zinc, lower lead prices on the London Metals Exchange and a declining Commodity Exchange finally had their effect on the regular market for lead. These factors plus a generally easy supply position resulted in a ½¢ reduction in the price of lead. New level for common grade is 13.30¢ f.o.b. St. Louis, 13.50¢ on the New York basis.

**More Tariff Talk . . .** While both lead and zinc prices were declining, the National Lead and Zinc Committee was filing a petition with the Tariff Commission. The committee advocates an increase in tariff rates and a limit on imports.

A 50 pct increase over import duties in effect on Jan. 1, 1945, was recommended, as were import quotas of 350,000 tons of lead and 300,000 tons of zinc per year. Suggestion included a provision that the import quota be suspended for lead or zinc following any month in which the price of the particular metal climbed to more than 15¢ per lb. Limitations would be reimposed as soon as the price went below 15¢.

**Need 31¢ Price . . .** These import quotas, it's felt, would allow domestic mine production of about 400,000 tons of lead and 700,000 tons of zinc annually. Filling the import quotas would then result in a supply just about equaling demand in this country. In any period of unusually high demand, a price of over 15¢ would eliminate the limit and permit filling of demand.

General feeling among zinc-lead people is that they need a combined price of 31¢ for the two metals in order to stay healthy. This proposed setup would be a big help in this direction. It would also tend to stop any violent price fluctuations. But whether it will get through the free trade feeling in Washington is questionable.

**Bolivia Signs . . .** The Bolivian Government last week signed a 1-year contract to supply the U. S. with 10,000 tons of tin concentrates. Rather than a flat price as in the last agreement, prices are based on the New York market.

While the contract does not expire for 12 months, it's expected that it will be completed during the spring. Bolivia has good quantities of tin above ground at present that haven't yet found a home. Bolivian officials in Washington say that this contract provides a market for about one-third of annual output, most of it from nationalized mines.

**Demand Mixed . . .** Expecting some easing in demand for aluminum, Richard S. Reynolds, Jr., president of Reynolds Metals Co., foresees more pavement pounding for aluminum salesmen starting early next year.

He reports easing already apparent in farm building products, screw machine stock, and aluminum power transmission cables. But he points out that sheet and foil demand is very strong with order backlogs stacked to the end of the year. Demand for the light metal is also strong for transportation and architectural uses.

**NONFERROUS METAL PRICES**

*(Cents per lb except as noted)*

| | Sept. 16 | Sept. 17 | Sept. 18 | Sept. 19 | Sept. 21 | Sept. 22 |
|---|---|---|---|---|---|---|
| Copper, electro, Conn. .... | 29.00–30.00 | 29.00–30.00 | 29.00–30.00 | 29.00–30.00 | 29.00–30.00 | 29.00–30.00 |
| Copper, Lake delivered .... | 30.125 | 30.125 | 30.125 | 30.125 | 30.125 | 30.125 |
| Tin, Straits, New York ..... | 81.00 | 81.25 | 81.25 | .... | 81.50 | 81.50* |
| Zinc, East St. Louis ..... | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 |
| Lead, St. Louis ..... | 13.30 | 13.30 | 13.30 | 13.30 | 13.30 | 13.30 |

Note: Quotations are going prices
*Tentative

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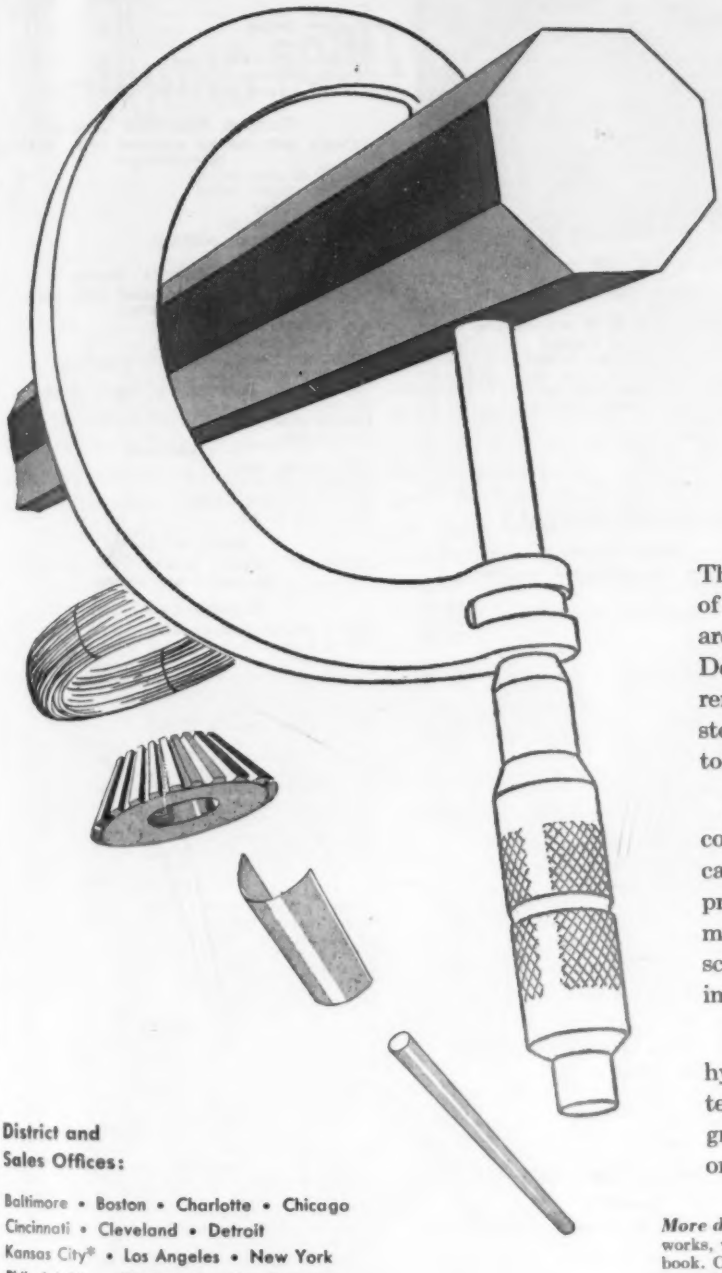

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# Nonferrous Prices

*(Effective Sept. 22, 1953)*

## MILL PRODUCTS

*(Cents per lb, unless otherwise noted)*

### Aluminum

*(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)*

**Flat Sheet:** 0.136-in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢. 0.032-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

**Plate, ¼-in. and Heavier:** 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

**Extruded Solid Shapes:** Shape factors 1 to 5, 37.4¢ to 82.8¢; 12 to 14, 38.2¢ to 99.0¢; 24 to 26, 40.9¢ to $1.29; 36 to 38, 48.4¢ to $1.8v

**Rod, Rolled:** 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.499-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

**Screw Machine Stock:** Rounds, 11S-T3, ½ to 11/32-in., 59.6¢ to 47.0¢; ⅝ to 1½-in., 46.6¢ to 43.8¢; 1 9/16 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

**Drawn Wire:** Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

**Extruded Tubing:** Rounds, 63S-T5, OD 1¼ to 2-in., 41.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

**Roofing Sheet:** Flat, per sheet, 0.032-in., 42¾ x 60 in., $2.838; x 96 in., $4.543; x 120 in., $5.680; x 144 in., $6.816. Coiled sheet, per lb, 0.019 in. x 28 in.

### Magnesium

*(F.o.b. mill, freight allowed)*

**Sheet and Plate:** FS1-O, ¼ in., 66¢; 3/16 in., 68¢; ½ in., 70¢; B & S Gage 10, 71¢; 12, 75¢. Specifications grade higher. Base: 30,000 lb.

**Extruded Round Rod:** M, diam ¼ to 0.311 in., 77¢; ½ to ¾ in., 60.5¢; 1¼ to 1.749 in., 56¢; 2½ to 5 in., 51.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

**Extruded Solid Shapes, Rectangles:** M. In weight per ft, for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

**Extruded Round Tubing:** M, 0.049 to 0.057 in. wall thickness: OD, ¼ to 5/16 in., $1.43; 5/16 to ⅝ in., $1.29; ½ to ⅝ in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, ⅝ to ¾ in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

### Titanium

*(100,000 lb base, f.o.b. mill)*

Commercially pure and alloy grades; Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

### Nickel, Monel, Inconel

*(Base prices, f.o.b. mill)*

| | "A" Nickel | Monel | Inconel |
|---|---|---|---|
| Sheet, CR | 86½ | 67½ | 92½ |
| Strip, CR | 92½ | 70½ | 98½ |
| Rod, bar | 82½ | 65½ | 88½ |
| Angles, HR | 82½ | 65½ | 88½ |
| Plate, HR | 84½ | 66½ | 90½ |
| Seamless Tube | 115½ | 100½ | 137½ |
| Shot, blocks | .... | 60 | .... |

### Copper, Brass, Bronze

*(Freight included on 500 lb)*

| | Sheet | Rods | Extruded Shapes |
|---|---|---|---|
| Copper | 46.41 | .... | 48.48 |
| Copper, h-r | 48.38 | 44.73 | .... |
| Copper, drawn | .... | 45.98 | .... |
| Low brass | 44.47 | 44.41 | .... |
| Yellow brass | 41.72 | 41.66 | .... |
| Red brass | 45.44 | 45.38 | .... |
| Naval brass | 45.76 | 40.07 | 41.33 |
| Leaded brass | .... | .... | 39.11 |
| Com. bronze | 46.95 | 46.89 | .... |
| Mang. bronze | 49.48 | 43.62 | 45.18 |
| Phos. bronze | 66.58 | 67.08 | .... |
| Muntz metal | 43.96 | 39.77 | 41.02 |
| Ni silver, 10 pct | 55.36 | .... | 62.63 |

## PRIMARY METALS

*(Cents per lb, unless otherwise noted)*

| | |
|---|---|
| Aluminum ingot, 99+%, 10,000 lb, freight allowed | 21.50 |
| Aluminum pig | 20.00 |
| Antimony, American, Laredo, Tex. | 34.50 |
| Beryllium copper, per lb conta'd Be. | $40.00 |
| Beryllium aluminum 5% Be, Dollars per lb contained Be | $72.75 |
| Bismuth, ton lots | $2.25 |
| Cadmium, del'd | $2.00 |
| Cobalt, 97-99% (per lb) | $2.40 to $2.47 |
| Copper, electro, Conn. Valley | 29.00 to 30.00 |
| Copper, Lake, delivered | 30.125 |
| Gold, U. S. Treas., dollars per oz. | $35.00 |
| Indium, 99.8%, dollars per troy oz. | $2.25 |
| Iridium, dollars per troy oz. | $165 to $175 |
| Lead, St. Louis | 13.30 |
| Lead, New York | 13.50 |
| Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb. | 27.00 |
| Magnesium, sticks, 100 to 500 lb. | 45.00 to 47.00 |
| Mercury, dollars per 76-lb. flask, f.o.b. New York | $186 to $189 |
| Nickel electro, f.o.b. N. Y. warehouse | 63.08 |
| Nickel oxide sinter, at Copper Creek, Ont., contained nickel | 56.25 |
| Palladium, dollars per troy oz. | $24.00 |
| Platinum, dollars per troy oz. | $93.00 |
| Silver, New York, cents per oz. | 85.25 |
| Tin, New York | 81.50 |
| Titanium, sponge | $5.00 |
| Zinc, East St. Louis | 10.00 |
| Zinc, New York | 10.50 |
| Zirconium copper, 50 pct | $6.20 |

## REMELTED METALS

### Brass Ingot

*(Cents per lb, delivered carloads)*

| | |
|---|---|
| 85-5-5-5 ingot | |
| No. 115 | 24.50 |
| No. 120 | 23.75 |
| No. 123 | 23.25 |
| 80-10-10 ingot | |
| No. 305 | 28.75 |
| No. 315 | 26.50 |
| 88-10-2 ingot | |
| No. 210 | 37.50 |
| No. 215 | 34.00 |
| No. 245 | 29.50 |
| Yellow ingot | |
| No. 405 | 20.75 |
| Manganese bronze | |
| No. 421 | 25.25 |

### Aluminum Ingot

*(Cents per lb del'd, 30,000 lb and over)*

| | |
|---|---|
| 95-5 luminum-silicon alloys | |
| 0.30 copper, max. | 23.75-24.50 |
| 0.60 copper, max. | 23.25-24.25 |
| Piston alloys (No. 122 type) | 22.00-22.50 |
| No. 12 alum. (No. 2 grade) | 21.50-22.00 |
| 108 alloy | 22.00-22.50 |
| 195 alloy | 22.50-24.00 |
| 13 alloy (0.60 copper max.) | 23.00-23.50 |
| ASX-679 | 21.75-22.50 |

### Steel deoxidizing aluminum, notch-bar granulated or shot

| | |
|---|---|
| Grade 1—95-97½% | 21.75-23.50 |
| Grade 2—92-95% | 20.75 |
| Grade 3—90-92% | 19.75 |
| Grade 4—85-90% | 18.50-20.00 |

## ELECTROPLATING SUPPLIES

### Anodes

*(Cents per lb, freight allowed, 5000 lb lots)*

| | |
|---|---|
| Copper | |
| Cast, oval, 15 in. or longer | 44.54 |
| Electrodeposited | 38.38 |
| Flat rolled | 47.14 |
| Brass, 80-20 | |
| Cast, oval, 15 in. or longer | 43.515 |
| Zinc, flat cast | 20.25 |
| Ball, anodes | 18.50 |
| Nickel, 99 pct plus | |
| Cast | 85.00 |
| Rolled, depolarized | 86.00 |
| Cadmium | $2.15 |
| Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. | 94½ |

### Chemicals

*(Cents per lb, f.o.b. shipping points)*

| | |
|---|---|
| Copper cyanide, 100 lb drum | 63.90 |
| Copper sulfate, 99.5 crystals, bbl | 12.85 |
| Nickel salts, single or double, 4-100 lb bags, frt. allowed | 30.00 |
| Nickel chloride, 375 lb drum | 38.00 |
| Silver cyanide, 100 oz. lots, per oz. | 75½ |
| Sodium cyanide, 96 pct domestic 200 lb drums | 19.25 |
| Zinc cyanide, 100 lb drum | 54.30 |

## SCRAP METALS

### Brass Mill Scrap

*(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)*

| | Heavy | Turnings |
|---|---|---|
| Copper | 26 | 25¼ |
| Yellow brass | 19¾ | 18 |
| Red brass | 23 | 22½ |
| Comm. bronze | 23⅞ | 23½ |
| Mang. bronze | 18½ | 17½ |
| Yellow brass rod ends | 19½ | .... |

### Custom Smelters' Scrap

*(Cents per pound carload lots, delivered to refinery)*

| | |
|---|---|
| No. 1 copper wire | 23½ |
| No. 2 copper wire | 21½—22 |
| Light copper | 20 —20½ |
| *Refinery brass | 19 |

* Dry copper content.

### Ingot Makers' Scrap

*(Cents per pound, carload lots, delivered to refinery)*

| | | |
|---|---|---|
| No. 1 copper wire | 23 | —23½ |
| No. 2 copper wire | | 21½ |
| Light copper | | 20 |
| No. 1 composition | 17 | —17½ |
| No. 1 comp. turnings | 16½ | —17 |
| Rolled brass | 14 | —14½ |
| Brass pipe | 15 | —16 |
| Radiators | 13 | —13¾ |
| *Aluminum* | | |
| Mixed old cast | 12 | —12½ |
| Mixed new clips | 13¾ | —14½ |
| Mixed turnings, dry | 13 | —13½ |
| Pots and pans | 12 | —12½ |

### Dealers' Scrap

*(Dealers' buying price, f.o.b. New York in cents per pound)*

#### Copper and Brass

| | | |
|---|---|---|
| No. 1 heavy copper and wire | 21 | —22 |
| No. 2 heavy copper and wire | 19 | —20 |
| Light copper | 16½ | —17½ |
| New type shell cuttings | 16½ | —17½ |
| Auto radiators (unsweated) | 11 | —11½ |
| No. 1 composition | 15 | —16 |
| No. 1 composition turnings | 14½ | —15½ |
| Unlined red car boxes | 13 | —13½ |
| Cocks and faucets | 13 | —13½ |
| Mixed heavy yellow brass | 10 | —10½ |
| Old rolled brass | 13 | —13½ |
| Brass pipe | 14½ | —15 |
| New soft brass clippings | 16 | —16½ |
| Brass rod ends | 15 | —15½ |
| No. 1 brass rod turnings | 14 | —14½ |

#### Aluminum

| | |
|---|---|
| Alum. pistons and struts | 6½ |
| Aluminum crankcases | 9 |
| 2S aluminum clippings | 13 |
| Old sheet and utensils | 9 |
| Borings and turnings | 6½ |
| Misc. cast aluminum | 9 |
| Dural clips (24S) | 10 |

#### Zinc

| | | |
|---|---|---|
| New zinc clippings | 5 | — 5½ |
| Old zinc | 3½ | — 4 |
| Zinc routings | 2 | — 2½ |
| Old die cast scrap | 3 | — 3½ |

#### Nickel and Monel

| | | |
|---|---|---|
| Pure nickel clippings | 70 | —80 |
| Clean nickel turnings | 40 | —50 |
| Nickel anodes | 70 | —80 |
| Nickel rod ends | 70 | —80 |
| New Monel clippings | 28 | —30 |
| Clean Monel turnings | 19 | —21 |
| Old sheet Monel | 25 | —27 |
| Nickel silver clippings, mixed | | 14 |
| Nickel silver turnings, mixed | | 12 |

#### Lead

| | | |
|---|---|---|
| Soft scrap, lead | 9½ | —10 |
| Battery plates (dry) | 5 | — 5½ |
| Batteries, acid free | | 3½ |

#### Magnesium

| | | |
|---|---|---|
| Segregated solids | 20 | —21 |
| Castings | 19 | —20 |

#### Miscellaneous

| | | |
|---|---|---|
| Block tin | 65 | —67 |
| No. 1 pewter | 42 | —45 |
| No. 1 auto babbitt | 37 | —40 |
| Mixed common babbitt | 11 | —12 |
| Solder joints | 14 | —14½ |
| Siphon tops | | 35 |
| Small foundry type | | 14 |
| Monotype | | 13 |
| Lino. and stereotype | | 11⅝ |
| Electrotype | | 10½ |
| Hand picked type shells | 7 | — 8 |
| Lino. and stereo. dross | | 4½ |
| Electro dross | 3½ | — 4 |

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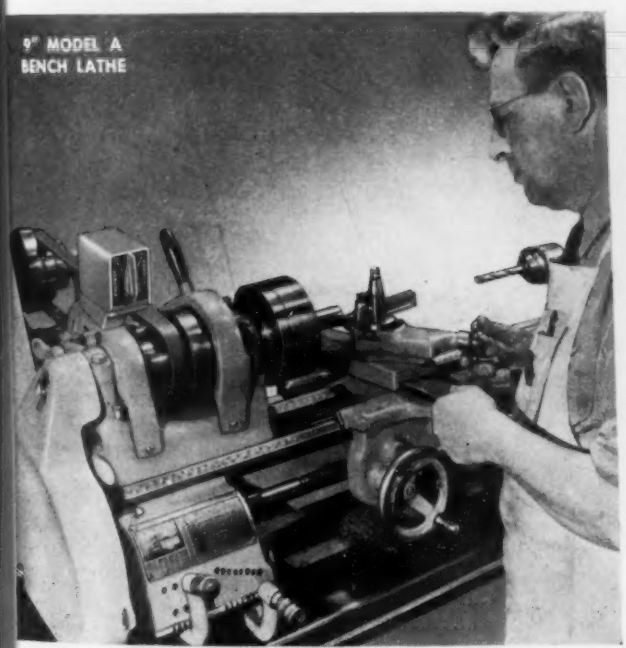

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2. Order by mail from your distributor.
3. If no distributor is nearby, order direct from factory.

South Bend machine tools with accessories may be purchased on convenient terms up to 12 months.

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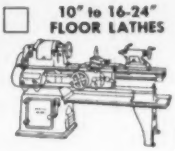
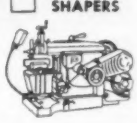


☐ 10" to 16-24" FLOOR LATHES

☐ DRILL PRESSES

☐ 7" BENCH SHAPERS



☐ TOOL GRINDERS

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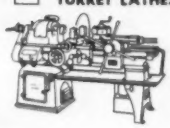

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# Shaking Down Period Hits Full Force

**Buyer still withholding orders and market continues its dive . . . Iron Age Scrap Composite slumps . . . Scrap supply seen abundant . . . How long can downtrend continue?**

That shaking down period of scrap prices was here with fuller impact this week and the market got the cold shoulder from steel mill buyers who were still in a position to lean back on stockpiles and cut back on buying.

THE IRON AGE No. 1 Steel Scrap Composite continued its downward trend of several weeks and reached a new low—$35.33 against $37.17 last week. Scrap traders had to accept the facts: Since the ingot rate was seen as declining, scrap supply this year and next would be abundant. Prices will react accordingly.

Was this the end of the roller coaster decline? No one would take any bets that prices would not decline further in the face of buying apathy. Firmness at a new low level could be reached—only if mills released substantial orders. The buyer was in control of the market, confidently so.

Lifelessness of the scrap market today reflects inventory ability of the buyer to refrain from buying. It reflects also the prospect of a declining ingot rate.

**Pittsburgh**—Scrap prices continued downward this week. Openhearth grades dropped $3 per ton, and the entire list was off $1 to $3. Buying was limited and indicated further weakness. On basis of latest list, No. 1 railroad was off $2 per ton. Blast furnace scrap also declined $1 to $2. Cast scrap was off $1 per ton. Despite approach of winter, mills show little interest in building stocks. Comfortable inventories combined with expected reduction in operations in fourth quarter are blamed for poor market.

**Chicago**—A scattering of sales in various grades pegged some items, but for a number of grades prices remained as nominal as last week. Brokers were buying No. 2 bundles at $24 with no difficulty. Railroad specialties were easily come by. Small mill sales in steelmaking grades were doing little to firm the market. However purchases are expected by at least two mills, and there is a growing feeling that these will hold the market. With producer and dealer resistance beginning to evidence itself slightly.

**Philadelphia** — Moderate to small sales continue to set the pace in this downward-moving market. Openhearth scrap is off $2, electric furnace material is down $2 to $3. Railroad grades are as much as $5 lower. With very slack trading in low phos, much of this and other premium scrap is going into No. 1 heavy melting. Under threat of a strike this week, scrap yard operators last week granted a 10¢ per hour across-the-board wage increase.

**New York**—Consensus of the trade is that the local market is just about ready for burial. Mills in the East have fair inventories, are just trimming them. Meanwhile they're letting the scrap trade carry the load. It's felt that one good purchase would freeze the market at present levels. Dealer resistance to low prices is beginning to be felt.

**Detroit** — Primary steelmaking grades dropped $2 across-the-board on the basis of a small sale and concrete offers to sell. Brokers here are sharpening pencils for close bidding on automotive lists. Few bids this month will be based on assumption that the scrap has a home. Result is expected to bring prices down substantially. Lists, however, reflect from 20 to 30 pct tonnage drops for October.

**Cleveland**—Prices on steelmaking grades slipped another $2 here and in the Valley as prospects for October buying dimmed. One large consumer was still holding up shipments on old orders. A Valley consumer expects to come into the market for limited tonnage next month, but orders won't match September volume. Distress scrap is piling up. Some brokers fear No. 1 heavy melting may fall to the low $30's.

**Birmingham**—The cast market was more active this week with price of No. 1 dropping 50¢ to $42.00, and stoveplate bringing $39. Steel scrap market was almost at a standstill, although an Atlanta mill bought small tonnage at unchanged prices. Largest buyer in the district was still out of the market, as were most of the northern mills. Dealers say prices they are able to pay for scrap are again slowing up their suppliers.

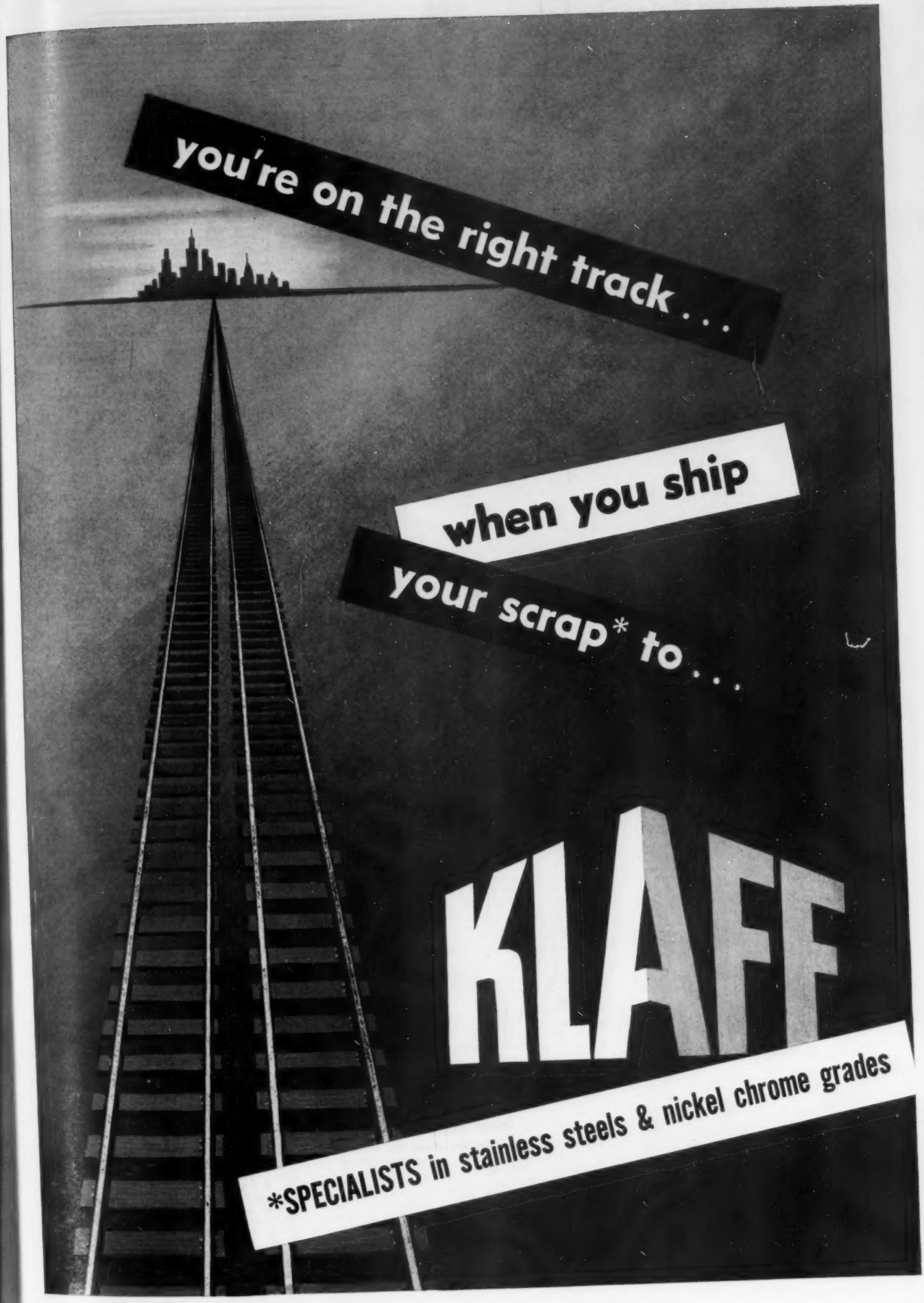
**St. Louis**—Market continues in the doldrums with the mills virtually out and inventories heavy. Feeling is that mills may be holding off fourth quarter buying until they know what business levels they can expect for themselves. Their commitments will be made accordingly.

**Cincinnati**—Scrap is at a standstill here. Market is completely inactive. Consumers are content to sit on comfortable inventories. Depressed condition of the market has scrapmen here keeping a close check on the stock market.

**Buffalo**—Scrap prices dropped an additional $3 to $4 a ton. Market weakness dominates trade as buying interest is virtually nil. Two top mills continue an embargo on shipments, and dealers are searching for bids to establish markets. Dealers' yards are bulging with material, and prices being paid for unprepared scrap are in line with reduced ranges.

**Boston**—Gloom blankets the scrap trade in New England. Prices are still sliding with quotations on all grades off $1 to $2 per gross ton.

**West Coast**—The scrap dealers' crying towels stayed tear-soaked last week. Market continued sluggish, and new price cuts of about $2 per ton were in the offing for October in California. Four furnaces are down in the San Francisco area, and several in southern California are not on full output. Renewed heavy pressure for licenses to export scrap to Japan is being exerted by several western dealers with stockpiles steadily decreasing in value. Seattle market has quieted as one area producer neared a full inventory.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# Scrap Prices

*(Effective Sept. 22, 1953)*

## Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

### Pittsburgh

| | |
|---|---|
| No. 1 hvy. melting | $37.00 to $38.00 |
| No. 2 hvy. melting | 33.00 to 34.00 |
| No. 1 bundles | 37.00 to 38.00 |
| No. 2 bundles | 31.00 to 32.00 |
| Machine shop turn. | 22.00 to 23.00 |
| Mixed bor. and ms. turns. | 22.00 to 23.00 |
| Shoveling turnings | 27.00 to 28.00 |
| Cast iron borings | 27.00 to 28.00 |
| Low phos. punch'gs, plate | 41.00 to 42.00 |
| Heavy turnings | 33.00 to 34.00 |
| No. 1 RR. hvy. melting | 40.00 to 41.00 |
| Scrap rails, random lgth. | 45.00 to 46.00 |
| Rails 2 ft and under | 51.00 to 52.00 |
| RR. steel wheels | 44.00 to 45.00 |
| RR. spring steel | 44.00 to 45.00 |
| RR. couplers and knuckles | 44.00 to 45.00 |
| No. 1 machinery cast. | 46.00 to 47.00 |
| Cupola cast | 38.00 to 39.00 |
| Heavy breakable cast | 36.00 to 37.00 |
| Malleable | 42.00 to 43.00 |

### Chicago

| | |
|---|---|
| No. 1 hvy. melting | $34.00 to $35.00 |
| No. 2 hvy. melting | 29.00 to 30.00 |
| No. 1 factory bundles | 36.00 to 37.00 |
| No. 1 dealers' bundles | 33.00 to 35.00 |
| No. 2 dealers' bundles | 26.00 to 27.00 |
| Machine shop turn. | 15.00 to 17.00 |
| Mixed bor. and turn. | 16.00 to 18.00 |
| Shoveling turnings | 16.00 to 18.00 |
| Cast iron borings | 16.00 to 18.00 |
| Low phos. forge crops | 41.00 to 43.00 |
| Low phos. punch'gs, plate | 37.00 to 38.00 |
| Low phos. 3 ft and under | 36.00 to 37.00 |
| No. 1 RR. hvy. melting | 35.00 to 37.00 |
| Scrap rails, random lgth. | 41.00 to 43.00 |
| Rerolling rails | 49.00 to 51.00 |
| Rails 2 ft and under | 48.00 to 50.00 |
| Locomotive tires, cut | 40.00 to 42.00 |
| Cut bolsters & slide frames | 40.00 to 42.00 |
| Angles and splice bars | 41.00 to 42.00 |
| RR. steel car axles | 47.00 to 48.00 |
| RR. couplers and knuckles | 41.00 to 42.00 |
| No. 1 machinery cast | 37.00 to 38.00 |
| Cupola cast | 33.00 to 35.00 |
| Heavy breakable cast | 32.00 to 33.00 |
| Cast iron brake shoes | 33.00 to 34.00 |
| Cast iron car wheels | 36.00 to 37.00 |
| Malleable | 40.00 to 41.00 |
| Stove plate | 31.00 to 33.00 |

### Philadelphia Area

| | |
|---|---|
| No. 1 hvy. melting | $33.00 to $35.00 |
| No. 2 hvy. melting | 30.00 to 32.00 |
| No. 1 bundles | 33.00 to 35.00 |
| No. 2 bundles | 29.00 to 30.00 |
| Machine shop turn. | 21.00 to 23.00 |
| Mixed bor., short turn. | 24.00 to 26.00 |
| Shoveling turnings | 26.00 to 28.00 |
| Clean cast chem. borings. | 36.00 to 37.00 |
| Low phos. 5 ft and under | 38.00 to 39.00 |
| Low phos. 2 ft and under | 39.00 to 40.00 |
| Low phos. punchings | 39.00 to 40.00 |
| Elec. furnace bundles | 35.00 to 37.00 |
| Heavy turnings | 32.00 to 34.00 |
| RR. steel wheels | 42.00 to 44.00 |
| RR. spring steel | 42.00 to 44.00 |
| Rails 18 in. and under | 46.00 to 48.00 |
| Cupola cast | 35.00 to 37.00 |
| Heavy breakable cast | 36.00 to 38.00 |
| Cast iron carwheels | 42.00 to 43.00 |
| Malleable | 42.00 to 43.00 |
| Unstripped motor blocks | 28.00 to 29.00 |
| No. 1 machinery cast. | 40.00 to 42.00 |
| Charging box cast. | 36.00 to 37.00 |

### Cleveland

| | |
|---|---|
| No. 1 hvy. melting | $34.00 to $35.00 |
| No. 2 hvy. melting | 30.00 to 31.00 |
| No. 1 bundles | 34.00 to 35.00 |
| No. 2 bundles | 28.00 to 29.00 |
| No. 1 busheling | 34.00 to 35.00 |
| Machine shop turn. | 19.00 to 20.00 |
| Mixed bor. and turn. | 23.00 to 24.00 |
| Shoveling turnings | 23.00 to 24.00 |
| Cast iron borings | 23.00 to 24.00 |
| Low phos. 2 ft and under | 39.00 to 40.00 |
| Drop forge flashings | 34.00 to 35.00 |
| No. 1 RR. hvy. melting | 38.00 to 39.00 |
| Rails 3 ft and under | 48.00 to 49.00 |
| Rails 18 in. and under | 50.00 to 51.00 |
| Railroad grate bars | 33.00 to 34.00 |
| Steel axle turnings | 32.00 to 33.00 |
| Railroad cast | 43.00 to 44.00 |
| No. 1 machinery cast. | 46.00 to 47.00 |
| Stove plate | 38.00 to 39.00 |
| Malleable | 44.00 to 45.00 |

### Youngstown

| | |
|---|---|
| No. 1 hvy. melting | $38.00 to $39.00 |
| No. 2 hvy. melting | 33.00 to 33.50 |
| No. 1 bundles | 38.00 to 39.00 |
| No. 2 bundles | 32.00 to 33.00 |
| Machine shop turn. | 21.00 to 22.00 |
| Shoveling turnings | 25.00 to 26.00 |
| Cast iron borings | 25.00 to 26.00 |
| Low phos. plate | 41.00 to 42.00 |

### Buffalo

| | |
|---|---|
| No. 1 hvy. melting | $37.00 to $38.00 |
| No. 2 hvy. melting | 32.00 to 33.00 |
| No. 1 busheling | 37.00 to 38.00 |
| No. 1 bundles | 37.00 to 38.00 |
| No. 2 bundles | 30.00 to 31.00 |
| Machine shop turn. | 22.50 to 23.50 |
| Mixed bor. and turn. | 23.00 to 24.00 |
| Shoveling turnings | 24.00 to 25.00 |
| Cast iron borings | 26.00 to 26.50 |
| Low phos. plate | 41.00 to 42.00 |
| Scrap rails, random lgth. | 38.00 to 38.50 |
| Rails 2 ft and under | 44.00 to 45.00 |
| RR. steel wheels | 44.00 to 44.50 |
| RR. spring steel | 44.00 to 44.50 |
| RR. couplers and knuckles | 44.00 to 44.50 |
| No. 1 machinery cast. | 36.00 to 37.00 |
| No. 1 cupola cast. | 32.00 to 33.00 |

### Detroit

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $31.00 to $32.00 |
| No. 2 hvy. melting | 25.00 to 26.00 |
| No. 1 bundles, openhearth | 32.00 to 33.00 |
| No. 2 bundles | 25.00 to 26.00 |
| New busheling | 30.00 to 32.00 |
| Drop forge flashings | 30.00 to 32.00 |
| Machine shop turn. | 14.00 to 15.00 |
| Mixed bor. and turn. | 15.00 to 16.00 |
| Shoveling turnings | 15.00 to 16.00 |
| Cast iron borings | 15.00 to 16.00 |
| Electric furnace, bundles. | 32.00 to 33.00 |
| Low phos. punch'gs, plate | 32.00 to 33.00 |
| No. 1 cupola cast. | 41.00 |
| Heavy breakable cast. | 30.00 |
| Stove plate | 33.00 |
| Automotive cast. | 43.00 |

### St. Louis

| | |
|---|---|
| No. 1 hvy. melting | $32.00 to $33.00 |
| No. 2 hvy. melting | 28.00 to 29.00 |
| No. 2 bundled sheets | 24.00 to 25.00 |
| Machine shop turn. | 13.00 to 14.00 |
| Cast iron borings | 13.00 to 14.00 |
| Shoveling turnings | 15.00 to 16.00 |
| No. 1 RR. hvy. melting | 36.00 to 37.00 |
| Rails, random lengths | 38.00 to 39.00 |
| Rails 18 in. and under | 44.00 to 45.00 |
| Locomotive tires, uncut | 37.00 to 38.00 |
| Angles and splice bars | 39.00 to 40.00 |
| Std. steel car axles | 42.00 to 43.00 |
| RR. spring steel | 38.00 to 39.00 |
| Cupola cast. | 37.00 to 39.00 |
| Hvy. breakable cast. | 28.00 to 29.00 |
| Cast iron brake shoes | 39.00 to 40.00 |
| Stove plate | 33.00 to 34.00 |
| Cast iron car wheels | 42.00 to 43.00 |
| Malleable | 39.00 to 40.00 |
| Unstripped motor blocks. | 28.00 to 29.00 |

### New York

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $29.00 to $30.00 |
| No. 2 hvy. melting | 25.00 to 26.00 |
| No. 2 bundles | 23.00 to 24.00 |
| Low phos. 2 ft and less. | 30.00 to 31.00 |
| Machine shop turn. | 14.00 to 15.00 |
| Mixed bor. and turn. | 16.00 to 17.00 |
| Shoveling turnings | 17.00 to 18.00 |
| Clean cast chem. borings. | 28.00 to 29.00 |
| No. 1 machinery cast. | 37.00 to 38.00 |
| Mixed yard cast. | 30.00 to 31.00 |
| Charging box cast. | 30.00 to 31.00 |
| Heavy breakable cast. | 30.00 to 31.00 |
| Unstripped motor blocks. | 20.00 to 21.00 |

### Birmingham

| | |
|---|---|
| No. 1 hvy. melting | $26.00 to $26.50 |
| No. 2 hvy. melting | 24.00 to 24.50 |
| No. 1 bundles | 26.00 to 26.50 |
| No. 2 bundles | 22.00 to 22.50 |
| No. 1 busheling | 26.00 to 26.50 |
| Machine shop turn. | 19.50 to 20.50 |
| Shoveling turnings | 20.50 to 22.50 |
| Cast iron borings | 22.75 to 23.75 |
| Electric furnace bundles. | 28.00 to 28.50 |
| Bar crops and plate | 38.00 to 39.00 |
| Structural and plate, 2 ft. | 36.00 to 38.00 |
| No. 1 RR. hvy. melting | 30.00 to 30.50 |
| Scrap rails, random lgth. | 39.00 to 40.00 |
| Rails, 18 in. and under | 42.00 to 43.00 |
| Angles & splice bars | 42.00 to 43.00 |
| Std. steel axles | 43.00 to 44.00 |
| No. 1 cupola cast. | 41.00 to 42.00 |
| Stove plate | 38.00 to 39.00 |
| Cast iron car wheels | 34.00 to 35.00 |
| Charging box cast. | 29.00 to 30.00 |
| Heavy breakable | 25.00 to 26.00 |
| Unstripped motor blocks. | 32.00 to 33.00 |
| Mashed tin cans | 17.00 to 18.00 |

### Boston

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $27.00 to $28.00 |
| No. 2 hvy. melting | 21.00 |
| No. 1 bundles | 27.00 to 28.00 |
| No. 2 bundles | 20.00 |
| No. 1 busheling | 27.00 to 28.00 |
| Elec. furnace, 3 ft & under | 27.00 to 28.00 |
| Machine shop turn. | 12.00 |
| Mixed bor. and short turn. | 17.00 |
| Shoveling turnings | 17.00 to 18.00 |
| Clean cast chem. borings. | 26.17 |
| No. 1 machinery cast. | 29.00 to 31.00 |
| Mixed cupola cast. | 26.50 to 27.50 |
| Heavy breakable cast. | 28.50 |
| Stove plate | 22.50 to 23.50 |
| Unstripped motor blocks. | 21.00 |

### Cincinnati

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $33.00 to $35.00 |
| No. 2 hvy. melting | 30.00 to 32.00 |
| No. 1 bundles | 33.00 to 35.00 |
| No. 3 bundles | 28.00 to 29.00 |
| Machine shop turn. | 15.00 to 16.00 |
| Mixed bor. and turn. | 17.00 to 18.00 |
| Shoveling turnings | 18.00 to 19.00 |
| Cast iron borings | 17.00 to 18.00 |
| Low phos. 18 in. & under | 42.00 to 43.00 |
| Rails, random lengths | 40.00 to 42.00 |
| Rails, 18 in. and under | 50.00 to 51.00 |
| No. 1 cupola cast. | 42.00 to 43.00 |
| Hvy. breakable cast. | 35.00 to 36.00 |
| Drop broken cast. | 46.00 to 47.00 |

### San Francisco

| | |
|---|---|
| No. 1 hvy. melting | $27.00 |
| No. 2 hvy. melting | 23.00 |
| No. 1 bundles | 24.00 |
| No. 2 bundles | 21.00 |
| No. 3 bundles | 17.00 |
| Machine shop turn. | 9.00 |
| Cast iron borings | 14.00 |
| No. 1 RR, hvy. melting | 27.00 |
| No. 1 cupola cast. | 39.00 |

### Los Angeles

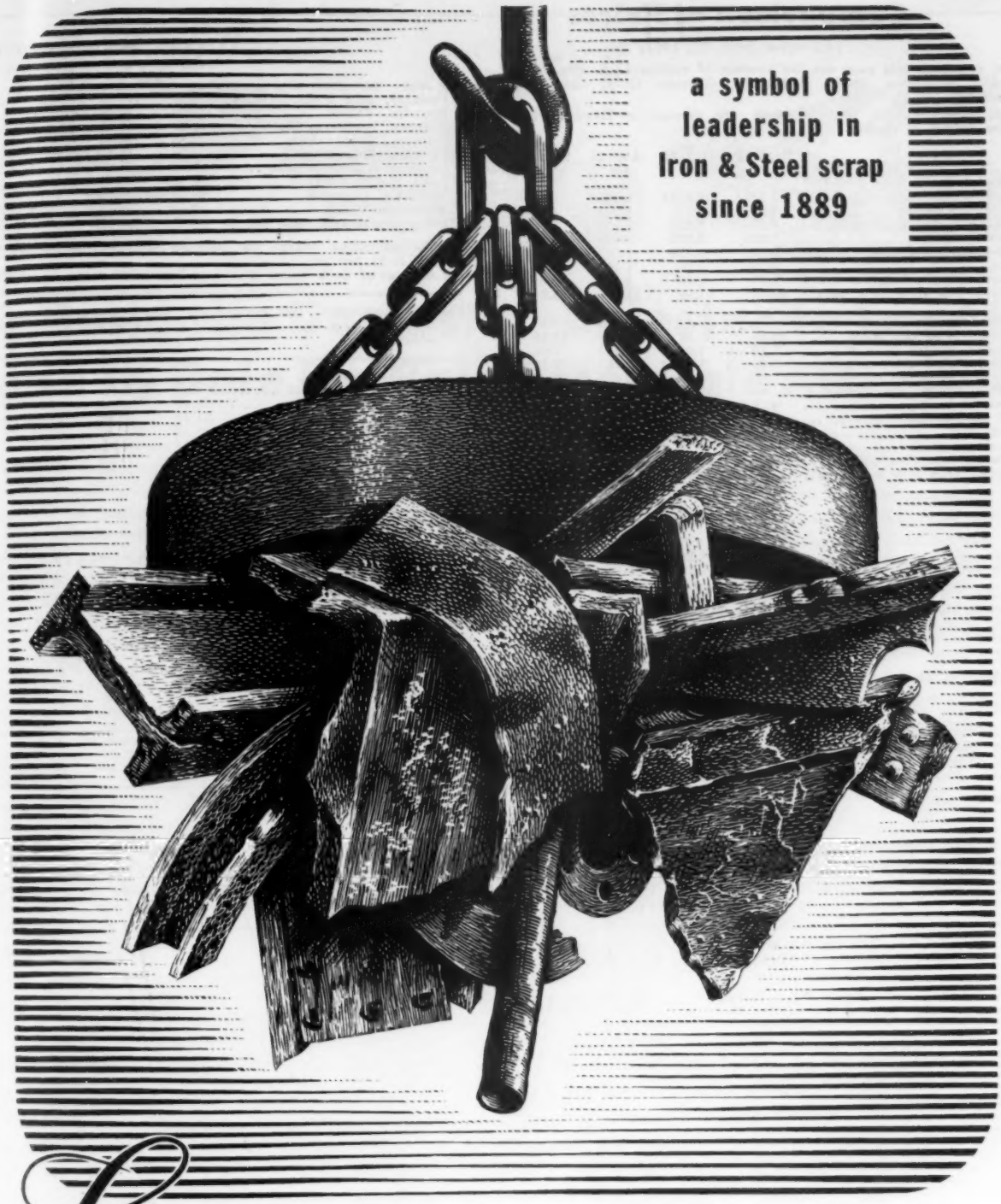
| | |
|---|---|
| No. 1 hvy. melting | $24.00 |
| No. 2 hvy. melting | 20.00 |
| No. 1 bundles | 23.00 |
| No. 2 bundles | 20.00 |
| No. 3 bundles | 16.00 |
| Mach. shop turn. | 8.00 |
| Shoveling turnings | 12.00 |
| Cast iron borings | 12.00 |
| Elec. fur. 1 ft and under | 29.00 |
| No. 1 RR, hvy. melting | 24.00 |
| No. 1 cupola cast. | 39.00 |

### Seattle

| | |
|---|---|
| No. 1 hvy. melting | $31.00 |
| No. 2 hvy. melting | $27.00 to 29.00 |
| No. 1 bundles | 28.00 |
| No. 2 bundles | 23.00 |
| No. 1 cupola cast. | 37.00 |
| Mixed yard cast. | 35.00 |

### Hamilton Ont.

| | |
|---|---|
| No. 1 hvy. melting | $32.00 |
| No. 1 bundles | 32.50 |
| No. 2 bundles | 32.00 |
| Mechanical bundles | 30.50 |
| Mixed steel scrap | 28.50 |
| Bushelings | 27.50 |
| Bush., new fact. prep'd. | 30.50 |
| Bush., new fact. unprep'd. | 29.50 |
| Short steel turnings | 22.50 |
| Mixed bor. and turn. | 26.50 |
| Rails, remelting | 32.50 |
| Rails, rerolling | 41.50 |
| Cast scrap | 43.00 |

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# Comparison of Prices

*(Effective Sept. 22, 1953)*

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

| | Sept. 22 1953 | Sept. 15 1953 | Aug. 25 1953 | Sept. 23 1952 |
|---|---|---|---|---|
| **Flat-Rolled Steel: (per pound)** | | | | |
| Hot-rolled sheets | 3.925¢ | 3.925¢ | 3.925¢ | 3.775¢ |
| Cold-rolled sheets | 4.775 | 4.775 | 4.775 | 4.575 |
| Galvanized sheets (10 ga.) | 5.275 | 5.275 | 5.275 | 5.075 |
| Hot-rolled strip | 3.925 | 3.925 | 3.925 | 3.725 |
| Cold-rolled strip | 5.575 | 5.575 | 5.575 | 5.20 |
| Plate | 4.10 | 4.10 | 4.10 | 3.90 |
| Plates wrought iron | 9.30 | 9.30 | 9.30 | 9.00 |
| Stainl's C-R strip (No. 302) | 41.50 | 41.50 | 41.50 | 36.75* |
| **Tin and Terneplate: (per base box)** | | | | |
| Tinplate (1.50 lb.) cokes | $8.95 | $8.95 | $8.95 | $8.95 |
| Tinplate, electro (0.50 lb.) | 7.65 | 7.65 | 7.65 | 7.65 |
| Special coated mfg. ternes | 7.75 | 7.75 | 7.75 | 7.75 |
| **Bars and Shapes: (per pound)** | | | | |
| Merchant bars | 4.15¢ | 4.15¢ | 4.15¢ | 3.95¢ |
| Cold finished bars | 5.20 | 5.20 | 5.20 | 4.925 |
| Alloy bars | 4.875 | 4.875 | 4.875 | 4.675 |
| Structural shapes | 4.10 | 4.10 | 4.10 | 3.85 |
| Stainless bars (No. 302) | 35.50 | 35.50 | 35.50 | 31.50* |
| Wrought iron bars | 10.40 | 10.40 | 10.40 | 10.05 |
| **Wire: (per pound)** | | | | |
| Bright wire | 5.525¢ | 5.525¢ | 5.525¢ | 5.226¢ |
| **Rails: (per 100 lb.)** | | | | |
| Heavy rails | $4.325 | $4.325 | $4.325 | $3.775 |
| Light rails | 5.20 | 5.20 | 5.20 | 4.25 |
| **Semifinished Steel: (per net ton)** | | | | |
| Rerolling billets | $62.00 | $62.00 | $62.00 | $59.00 |
| Slabs, rerolling | 62.00 | 62.00 | 62.00 | 59.00 |
| Forging billets | 75.50 | 75.50 | 75.50 | 70.50 |
| Alloy blooms, billets, slabs | 82.00 | 82.00 | 82.00 | 76.00 |
| **Wire Rod and Skelp: (per pound)** | | | | |
| Wire rods | 4.525¢ | 4.525¢ | 4.525¢ | 4.325¢ |
| Skelp | 3.75 | 3.75 | 3.75 | 3.55 |
| **Finished Steel Composite: (per pound)** | | | | |
| Base price | 4.634¢ | 4.634¢ | 4.634¢ | 4.376¢ |

* Add 4.7 pct.

| | Sept. 22 1953 | Sept. 15 1953 | Aug. 25 1953 | Sept. 23 1952 |
|---|---|---|---|---|
| **Pig Iron: (per gross ton)** | | | | |
| Foundry, del'd Phila. | $61.19 | $61.19* | $62.19 | $60.69 |
| Foundry, Valley | 56.50 | 56.50 | 56.50 | 55.00 |
| Foundry, Southern, Cin'ti | 60.43 | 60.43 | 60.43 | 58.93 |
| Foundry, Birmingham | 52.88 | 52.88 | 52.88 | 51.38 |
| Foundry, Chicago† | 56.50 | 56.50 | 56.50 | 55.00 |
| Basic del'd, Philadelphia | 60.27 | 60.27* | 61.27 | 59.77 |
| Basic, Valley furnace | 56.00 | 56.00 | 56.00 | 54.50 |
| Malleable, Chicago† | 56.50 | 56.50 | 56.50 | 55.00 |
| Malleable, Valley | 56.50 | 56.50 | 56.50 | 55.00 |
| Ferromanganese‡, cents per lb. | 10.00¢ | 10.00¢ | 10.00¢ | 8.00¢ |

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. Prices quoted on Ferroalloy pages, 76 pct Mn basis.

| | | | | |
|---|---|---|---|---|
| **Pig Iron Composite: (per gross ton)** | | | | |
| Pig iron | $56.59 | $56.59* | $56.76 | $55.26 |

* Revised.

| | | | | |
|---|---|---|---|---|
| **Scrap: (per gross ton)** | | | | |
| No. 1 steel, Pittsburgh | *$37.50* | $40.50 | $43.50 | $43.00* |
| No. 1 steel, Phila. area | *$4.00* | 36.00 | 42.50 | 41.50* |
| No. 1 steel, Chicago | *$4.50* | 35.00 | 39.00 | 41.50* |
| No. 1 bundles, Detroit | *32.50* | 34.50 | 40.50 | 41.15* |
| Low phos., Youngstown | *41.50* | 44.50 | 48.50 | 46.50* |
| No. 1 mach'y cast, Pittsburgh | *46.50* | 47.50 | 49.50 | 52.00 |
| No. 1 mach'y cast, Philadel'a | *41.00* | 43.00 | 45.50 | 52.00† |
| No. 1 mach'y cast, Chicago | *37.50* | 38.00 | 43.00 | 49.25 |

* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

| | | | | |
|---|---|---|---|---|
| **Steel Scrap Composite: (per gross ton)** | | | | |
| No. 1 heavy melting scrap | *$35.33* | $37.17 | $41.67 | $42.00 |

| | | | | |
|---|---|---|---|---|
| **Coke, Connellsville: (per net ton at oven)** | | | | |
| Furnace coke, prompt | $14.38 | $14.38 | $14.75 | $14.75 |
| Foundry coke, prompt | 17.26 | 17.25 | 17.26 | 17.76 |
| **Nonferrous Metals: (cents per pound to large buyers)** | | | | |
| Copper, electrolytic, Conn. | 29.50‡ | 29.50‡ | 29.50‡ | 24.56 |
| Copper, Lake, Conn. | 30.125 | 30.125 | 30.125 | 24.625 |
| Tin, Straits, New York | 81.50† | 81.125* | 82.25 | $1.21½ |
| Zinc, East St. Louis | 10.00 | 10.00 | 11.00 | 13.75 |
| Lead, St. Louis | *13.30* | 13.80 | 13.80 | 15.80 |
| Aluminum, virgin ingot | 21.50 | 21.50 | 21.50 | 20.00 |
| Nickel, electrolytic | 63.08 | 63.08 | 63.08 | 59.58 |
| Magnesium, ingot | 27.00 | 27.00 | 27.00 | 24.50 |
| Antimony, Laredo, Tex. | 34.50 | 34.50 | 34.50 | 39.00 |

† Tentative. ‡ Average. * Revised.

**Finished Steel Composite**

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips.

**Pig Iron Composite**

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

**Steel Scrap Composite**

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

| Producing Point | Basic | Fdry. | Mall. | Bess. | Low Phos. |
|---|---|---|---|---|---|
| Bethlehem *B3* | 58.00 | 58.50 | 59.00 | 59.50 | ..... |
| Birmingham *R3* | 52.38 | 52.88 | ..... | ..... | ..... |
| Birmingham *W9* | 52.38 | 52.88 | ..... | ..... | ..... |
| Birmingham *S5* | 52.38 | 52.88 | ..... | ..... | ..... |
| Buffalo *R3* | 56.00 | 56.50 | 57.00 | ..... | ..... |
| Buffalo *H1* | 56.00 | 56.50 | 57.00 | ..... | ..... |
| Buffalo *W6* | 56.00 | 56.50 | 57.00 | ..... | ..... |
| Chicago *I4* | 56.00 | 56.50 | 56.50 | 57.00 | ..... |
| Cleveland *A5* | 56.00 | 56.50 | 56.50 | 57.00 | 61.00 |
| Cleveland *R3* | 56.00 | 56.50 | 56.50 | ..... | ..... |
| Daingerfield *L3* | 52.50 | 52.50 | 52.50 | ..... | ..... |
| Duluth *I4* | 56.00 | 56.50 | 56.50 | 57.00 | ..... |
| Erie *I4* | 56.00 | 56.50 | 56.50 | 57.00 | ..... |
| Everett *M6* | ..... | 63.25 | 63.75 | ..... | ..... |
| Fontana *K1* | 62.00 | 62.50 | ..... | ..... | ..... |
| Geneva, Utah *C7* | 56.00 | 56.50 | 56.50 | 57.00 | 61.00 |
| Granite City *G2* | 57.90 | 58.40 | 58.90 | ..... | ..... |
| Hubbard *Y1* | ..... | ..... | 56.50 | ..... | ..... |
| Minnequa *C6* | 58.00 | 59.00 | 59.00 | ..... | ..... |
| Monessen *P6* | 56.00 | ..... | ..... | ..... | ..... |
| Neville Isl. *P4* | 56.00 | 56.50 | 56.50 | ..... | ..... |
| Pittsburgh *U1* | 56.00 | ..... | ..... | 57.00 | ..... |
| Sharpsville *S3* | 56.00 | 56.50 | 56.50 | 57.00 | ..... |
| Steelton *B3* | 58.00 | 58.50 | 59.00 | 59.50 | 64.00 |
| Swedeland *A2* | 58.00 | 58.50 | 59.00 | 59.50 | ..... |
| Toledo *I4* | 56.00 | 56.50 | 56.50 | 57.00 | ..... |
| Troy, N. Y. *R3* | 58.00 | 58.50 | 59.00 | 59.50 | 64.00 |
| Youngstown *Y1* | ..... | ..... | 56.50 | 57.00 | ..... |
| N. Tonawanda *T1* | ..... | 56.50 | 57.00 | ..... | ..... |

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, *H1*, $68.25; Jackson, *J1*, *G1*, $67.00. Add $1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct or more phosphorus. Manganese as above Bessemer ferrosilicon prices are $1 over comparable silvery iron.

## STAINLESS STEELS

Base price cents per lb., f.o.b. mill

| Product | 301 | 302 | 303 | 304 | 316 | 321 | 347 | 410 | 416 | 430 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ingots, rerolling | 16.25 | 17.25 | 18.75 | 18.25 | 28.00 | 22.75 | 24.50 | 14.00 | ..... | 14.25 |
| Slabs, billets, rerolling | 20.50 | 22.75 | 24.75 | 23.75 | 36.25 | 29.50 | 32.25 | 18.25 | ..... | 18.50 |
| Forg. discs, die blocks, rings | 38.50 | 38.50 | 41.50 | 40.50 | 60.00 | 45.50 | 50.75 | 31.00 | 31.75 | 31.75 |
| Billets, forging | 29.50 | 29.75 | 32.25 | 31.00 | 46.50–46.75 | 35.25 | 39.50 | 24.00 | 24.50 | 24.50 |
| Bars, wires, structurals | 35.25 | 35.50 | 38.25 | 37.25 | 55.50 | 42.00 | 46.75 | 28.75 | 29.25 | 29.25 |
| Plates | 37.25–37.50 | 37.50 | 39.75 | 39.75 | 59.00 | 45.75–46.00 | 51.25 | 30.00 | 30.50–31.00 | 30.50 |
| Sheets | 46.25 | 46.50 | 48.75 | 48.75 | 64.50 | 55.50 | 60.75 | 40.75 | 41.25 | 43.50 |
| Strip, hot-rolled | 29.75 | 32.00 | 36.75 | 34.25 | 55.00 | 42.00 | 46.50 | 26.25 | ..... | 27.00 |
| Strip, cold-rolled | 38.25–38.50 | 41.50 | 45.50 | 43.75 | 66.50 | 54.50 | 59.25 | 34.25 | 41.25 | 34.75 |

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa., *U1;* Washington, Pa., *W2;* (type 316 add 4.5¢) *J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4;* Lockport, N. Y., *R4.*

*Strip:* Midland, Pa., *C11;* Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* (type 316 add 4.5¢); W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown, O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Lockport, N. Y., *S4;* Sharon, Pa., *S1* (type 301 add ½¢); Butler, Pa., *A7;* Wallingford, Conn., *W1.*

*Bars:* Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Lockport, N. Y., *S4;* Canton, O., *T5;* Ft. Wayne, *J4.*

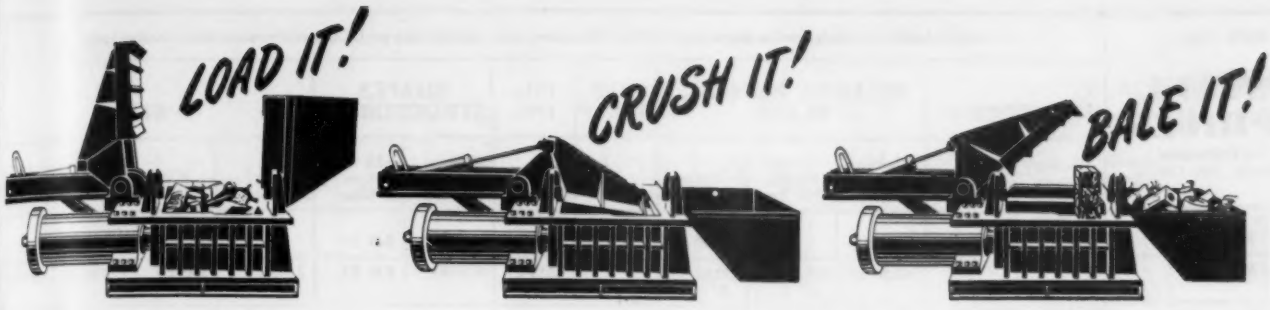
*Wire:* Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

*Structurals:* Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*

*Plates:* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Lockport, N. Y., *S4;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3.*

*Forged discs, die blocks, rings:* Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich., *A3;* Washington, Pa., *J2.*

*Forging billets:* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11.*




# We Build the Dempster-Balester to Load It, Crush It, Bale It— Bale After Bale After Bale

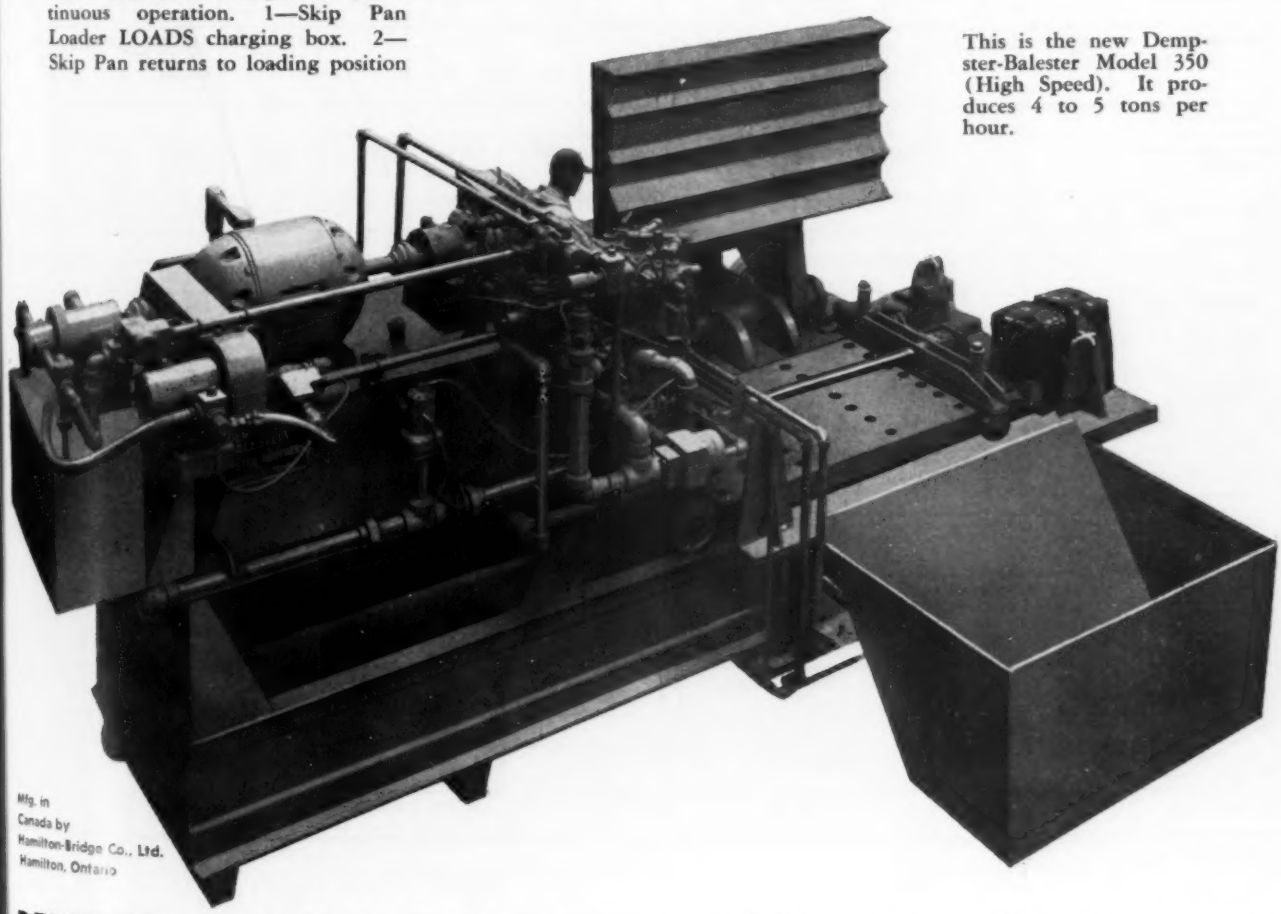
You not only get the nearest thing available to automatic baling when you buy a Dempster-Balester, but you get a press built to take the punishment of scrap metal baling consistently day-in and day-out . . . bale-after-bale-after-bale! The first Dempster-Balester was built in 1940 and it is still in operation. Today, hundreds of Dempster-Balesters are making money for men like yourself in over 200 cities in almost every state of the union, plus 15 foreign countries.

The Dempster-Balester's LOAD IT, CRUSH IT, BALE IT cycle (illustrated above) is a simple 1-2-3 continuous operation. 1—Skip Pan Loader LOADS charging box. 2—Skip Pan returns to loading position and Auxiliary Compression Door CRUSHES scrap with a 45-ton force. 3—As Compression Door returns to up-right position, charging box door closes . . . scrap is BALED and ejected. As each cycle ends another begins.

Without question, Dempster-Balesters are the fastest, most efficient presses baling scrap metal today! And you have six to choose from—three standard and three high speed models that turn out high density bales in capacities to meet any requirement from 1 to 9 tons per hour.

And don't overlook this important point. Before buying a baling press, it's important to know what kind of service you can expect. Certainly, no piece of heavy machinery can operate consistently without maintenance. Breakdowns cost money and when a part is needed for one of our presses, it is usually shipped the day your order is received. An ample stock of repair parts is constantly maintained to take care of you promptly! Write to us today for complete information.

A product of Dempster Brothers, Inc.



This is the new Dempster-Balester Model 350 (High Speed). It produces 4 to 5 tons per hour.

Mfg. in Canada by Hamilton-Bridge Co., Ltd. Hamilton, Ontario

**DEMPSTER BROTHERS, 393 Dempster Bldg., Knoxville, Tennessee**

IRON AGE

# STEEL PRICES

*(Effective Sept. 22, 1953)*

*Italics* identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

| | | INGOTS | | BILLETS, BLOOMS, SLABS | | | PIPE SKELP | PILING | SHAPES STRUCTURALS | | STRIP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Carbon Forging Net Ton | Alloy Net Ton | Carbon Rerolling Net Ton | Carbon Forging Net Ton | Alloy Net Ton | | Sheet Steel | Carbon | Hi Str. Low Alloy | Hot-rolled | Cold-rolled | Hi Str. H.R. Low Alloy | Hi Str. C.R. Low Alloy |
| EAST | Bethlehem, Pa. | | | | | $82.00 *B3* | | | 4.15 *B3* | 6.20 *B3* | | | | |
| | Buffalo, N. Y. | | | $62.00 *B3* | $75.50 *B3, R3* | $82.00 *B3, R3* | | 4.925 *B3* | 4.15 *B3* | 6.20 *B3* | 3.925 *B3, R3* | 5.45 *B3* | 6.00 *B3* | 8.425 *B3* |
| | Claymont, Del. | | | | | | | | | | | | | |
| | Coatesville, Pa. | | | | | | | | | | | | | |
| | Conshohocken, Pa. | | | | | | | | | | 4.05 *A2* | | 6.20 *A2* | |
| | Harrisburg, Pa. | | | | | | | | | | | | | |
| | Hartford, Conn. | | | | | | | | | | | | | |
| | Johnstown, Pa. | | | $62.00 *B3* | $75.50 *B3* | $82.00 *B3* | | | 4.15 *B3* | 6.20 *B3* | | | | |
| | Morrisville, Pa. | | | | | | | | | | | | | |
| | New Haven, Conn. | | | | | | | | | | | 5.95 *A5*<br>6.20 *D1* | | |
| | Phoenixville, Pa. | | | | | | | | 4.95 *P2* | | | | | |
| | Sparrows Pt., Md. | | | | | | | | | | 3.925 *B3* | 5.45 *B3* | 6.00 *B3* | 8.425 *B3* |
| | Worcester, Mass. | | | | | | | | | | | | | |
| | Trenton, N. J. | | | | | | | | | | | | | |
| MIDDLE WEST | Alton, Ill. | | | | | | | | | | 4.20 *L1* | | | |
| | Ashland, Ky. | | | | | | | | | | 3.925 *A7* | | | |
| | Canton-Massillon, Dover, Ohio | | | | $75.50 *R3* | $82.00 *R3* | | | | | | | | |
| | Chicago, Ill. | | | $62.00 *U1* | $75.50 *R3, U1,W8* | $82.00 *U1, W8,R3* | | 4.925 *U1* | 4.10 *U1, W8* | 6.175 *U1, Y1* | 3.925 *A1, W8* | 5.95 *A1* | 5.95 *R3* | |
| | Sterling, Ill. | | | | | | | | | | | | | |
| | Cleveland, Ohio | | | | $75.50 *R3* | | | | | | | 5.45 *A5, J3* | | 7.80 *J3*<br>8.15 *A5* |
| | Detroit, Mich. | | $63.00 *R5* | | $78.50 *R5* | $84.00 *R5* | | | | | 4.225 *G3*<br>4.40 *M2* | 5.65 *G3,M2*<br>5.95 *D1,P11*<br>6.05 *D2* | 6.50 *G3* | 7.90 *D2*<br>8.50 *G3* |
| | Duluth, Minn. | | | | | | | | | | | | | |
| | Gary, Ind. Harbor, Indiana | | | $62.00 *U1* | $75.50 *U1* | $82.00 *U1, Y1* | | 4.925 *I3* | 4.10 *I3, U1* | 6.175 *U1, I3* | 3.925 *I3, U1,Y1* | 5.70 *I3* | 5.95 *U1, I3*<br>6.45 *Y1* | |
| | Granite City, Ill. | | | | | | | | | | | | | |
| | Kokomo, Ind. | | | | | | | | | | | | | |
| | Mansfield, Ohio | | | | | | | | | | | 5.95 *E2* | | |
| | Middletown, Ohio | | | | | | | | | | | 5.45 *A7* | | |
| | Niles, Ohio<br>Sharon, Pa. | | | | | | | | | | 4.225 *S1* | 5.80 *S1* | 5.95 *S1* | 7.65 *S1* |
| | Pittsburgh, Pa.<br>Midland, Pa.<br>Butler, Pa. | $59.00 *U1* | $62.00 *U1 C11* | $62.00 *U1, J3* | $75.50 *J3 U1* | $82.00 *U1, C11* | 3.75 *U1*<br>3.85 *J3* | 4.925 *U1* | 4.10 *J3, U1* | 6.175 *J3, U1* | 4.425 *S7,S9*<br>3.925 *A7* | 5.45 *B4 J3*<br>6.15 *S7* | | 7.80 *J3* |
| | Portsmouth, Ohio | | | | | | | | | | | | | |
| | Weirton, Wheeling, Follansbee, W. Va. | | | | | | | | 4.35 *W3* | | 4.025 *W3* | 5.45 *F3, W3* | 6.30 *W3* | 6.30 *W3* |
| | Youngstown, Ohio | | | | | $82.00 *Y1, C10* | 3.75 *R3, U1* | | 4.10 *Y1* | 6.675 *Y1* | 3.925 *R3, U1,Y1* | 5.45 *R3,Y1*<br>5.95 *C5* | 5.95 *U1, R3*<br>6.45 *Y1* | 7.60 *R3*<br>8.30 *Y1* |
| WEST | Fontana, Cal. | $86.00 *K1* | $88.00 *K1* | $81.00 *K1* | $94.50 *K1* | $101.00 *K1* | | | 4.75 *K1* | 6.825 *K1* | 4.70 *K1* | 7.35 *K1* | 7.06 *K1* | |
| | Geneva, Utah | | | | $75.50 *C7* | | | | 4.10 *C7* | 6.175 *C7* | | | | |
| | Kansas City, Mo. | | | | | | | | 4.90 *S2* | 6.875 *S2* | 4.625 *S2* | | 6.65 *S2* | |
| | Los Angeles, Torrance, Cal. | | | | $94.50 *B2* | $102.00 *B2* | | | 4.80 *B2, C7* | 6.85 *B2* | 4.675 *B2, C7* | 7.50 *C1* | | |
| | Minnequa, Colo. | | | | | | | | 4.55 *C6* | | 4.025 *C6* | | | |
| | San Francisco, Niles, Pittsburg, Cal. | | | | $94.50 *B2* | | | | 4.75 *B2*<br>4.91 *P9* | 6.80 *B2* | 4.675 *B2, C7* | | | |
| | Seattle, Wash. | | | | $94.50 *B2, S11* | | | | 4.85 *B2* | 6.90 *B2* | | | | |
| SOUTH | Atlanta, Ga. | | | | | | | | | | 4.175 *A8* | | | |
| | Fairfield, Ala.<br>Alabama City, Ala. | | | $62.00 *T2* | $75.50 *T2* | | | | 4.10 *R3, T2* | 6.175 *T2* | 3.925 *R3, T2* | | 5.95 *T2* | |
| | Houston, Texas | | | | $85.50 *S2* | $92.00 *S2* | | | 4.60 *S2* | | 4.425 *S2* | | | |

*Italics* identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

# STEEL PRICES

*(Effective Sept. 22, 1953)*

| SHEETS | | | | | | | | | WIRE ROD | TINPLATE† | | BLACK PLATE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hot-rolled *18* ga. & hvyr. | Cold-rolled | Galvanized *10* ga. | Enameling *12* ga. | Long Terne *10* ga. | Hi Str. Low Alloy H.R. | Hi Str. Low Alloy C.R. | Hi Str. Low Alloy Galv. | Hot-rolled *19* ga. | | Cokes* *1.25*-lb. base box | Electro* *0.25*-lb. base box | Holloware Enameling *29* ga. | |
| | | | | | | | | | | | | | Bethlehem, Pa. |
| 3.925 *B3* | 4.775 *B3* | | | | 5.90 *B3* | 7.225 *B3* | | | 4.525 *W6* | | | | Buffalo, N. Y. |
| | | | | | | | | | | † Special coated mfg terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢. | | | Claymont, Del. |
| | | | | | | | | | | | | | Coatesville, Pa. |
| 4.05 *A2* | | | | | 6.15 *A2* | | | | | | | | Conshohocken, Pa |
| | | | | | | | | | | | | | Harrisburg, Pa. |
| | | | | | | | | | | | | | Hartford, Conn. |
| | | | | | | | | | 4.525 *B3* | | | | Johnstown, Pa. |
| 4.025 *U1* | 4.875 *U1* | | | | | | | | | $8.80 *U1* | $7.50 *U1* | 6.60 *U1* | Morrisville, Pa. |
| | | | | | | | | | | | | | New Haven, Conn. |
| | | | | | | | | | | | | | Phoenixville, Pa. |
| 3.925 *B3* | 4.775 *B3* | 5.275 *B3* | | | 5.90 *B3* | 7.225 *B3* | 8.075 *B3* | | 4.625 *B3* | $8.80 *B3* | $7.50 *B3* | | Sparrows Pt., Md. |
| | | | | | | | | | 4.825 *A5* | | | | Worcester, Mass. |
| | | | | | | | | | | | | | Trenton, N. J. |
| | | | | | | | | | 4.70 *L1* | | | | Alton, Ill. |
| 3.925 *A7* | | 5.275 *A7* | 5.175 *A7* | | | | | | | | | | Ashland, Ky. |
| | | 5.275 *R3* 5.675 *R1* | | | | | | 5.825 *R1* | | | | | Canton-Massillon, Dover, Ohio |
| 3.925 *A1, W8* | | | | | 5.90 *U1* | | | | 4.525 *A5, N4, R3* | | | | Chicago, Joliet, Ill. |
| | | | | | | | | | 4.625 *N4* | | | | Sterling, Ill. |
| 3.925 *J3, R3* | 4.775 *J3, R3* | | 5.175 *R3* | | 5.90 *J3, R3* | 7.225 *J3, R3* | | | 4.525 *A5* | | | | Cleveland, Ohio |
| 4.125 *G3* | 4.975 *G3* | | | | 6.375 *G3* | 7.675 *G3* | | | | | | | Detroit, Mich. |
| | | | | | | | | | | | | | Duluth, Minn. |
| 3.925 *I3, U1, Y1* | 4.775 *I3, U1, Y1* | 5.275 *U1* 5.325 *I3* | 5.175 *I3, U1* | 5.675 *U1* | 5.90 *U1, I3* 6.40 *Y1* | 7.225 *U1* 7.725 *Y1* | | | | $8.70 *I3, U1, Y1* | $7.40 *I3, U1* | 6.10 *U1, Y1* | Gary, Ind. Harbor, Indiana |
| 4.30 *G2* | 5.27 *G2* | 5.475 *G2* | 5.875 *G2* | | | | | | | | $7.60 *G2* | 6.30 *G2* | Granite City, Ill. |
| | | 5.375 *C9* | | | | | | | | | | | Kokomo, Ind. |
| | | | | 6.25 *E2* | | | | 5.80 *E2* | | | | | Mansfield, Ohio |
| | 4.775 *A7* | | 5.175 *A7* | 5.675 *A7* | | | | | | | | | Middletown, Ohio |
| 4.225 *S1* 5.425 *N3* | 5.80 *N3* | | 6.775 *N3* | 5.45 *S1* 6.00 *N3* | 5.90 *S1* | | | | | | $7.40 *R3* | | Niles, Ohio Sharon, Pa. |
| 3.925 *J3, U1, P6, A7* | 4.775 *J3, U1* | 5.275 *U1* | 5.175 *U1* | | 5.90 *J3, U1* | 7.225 *J3, U1* | 7.925 *U1* | | 4.525 *A5* 4.725 *P6* | $8.70 *J3, U1* | $7.40 *J3, U1* | 6.10 *U1* | Pittsburgh, Pa. Midland, Pa. Butler, Pa. |
| | | | | | | | | | 4.525 *P7* | | | | Portsmouth, Ohio |
| 3.925 *W3, W5* | 4.775 *W3, W5* 5.775 *F3* | 5.275 *W3, W5* | | 5.675 *W3, W5* | 6.175 *W3* | 7.475 *W3* | | | | $8.70 *W3, W5* | $7.40 *W3, W5* | 6.55 *W5* 6.10 *F3* | Weirton, Wheeling, Follansbee, W. Va. |
| 3.925 *R3, U1, Y1* | 4.775 *R3, Y1* | 5.175 *Y1* | | | 5.90 *U1, R3* 6.40 *Y1* | 7.225 *R3* 7.725 *Y1* | | | 4.525 *Y1* | $8.70 *R3* | | | Youngstown, Ohio |
| 4.70 *K1* | 5.875 *K1* | | | | 7.00 *K1* | 8.275 *K1* | | | 5.325 *K1* | | | | Fontana, Cal. |
| 4.025 *C7* | | | | | | | | | | | | | Geneva, Utah |
| | | | | | | | | 4.775 *C6* | 4.865 *S2* | | | | Kansas City, Mo. |
| 4.625 *C7* | | 6.275 *C7* | | | | | | 5.325 *B2* | | | | | Los Angeles, Torrance, Cal. |
| | | | | | | | | | 4.775 *C6* | | | | Minnequa, Colo. |
| 4.625 *C7* | 5.725 *C7* | 6.025 *C7* | | | | | | | 5.175 *C7* | $9.45 *C7* | $8.15 *C7* | | San Francisco, Niles, Pittsburg, Cal. |
| | | | | | | | | | | | | | Seattle, Wash. |
| | | | | | | | | | | | | | Atlanta, Ga. |
| 3.925 *R3, T2* | 4.775 *T2* | 5.275 *R3, T2* | | | 5.90 *T2* | | | 5.125 *T2* 5.225 *R3* | 4.525 *T2, R3* | $8.80 *T2* | $7.50 *T2* | | Fairfield, Ala. Alabama City, Ala. |
| 4.025 *S2* | | | | | | | | | 4.925 *S2* | | | | Houston, Texas |

IRON AGE

# STEEL PRICES

*(Effective Sept. 22, 1958)*

*Italics* identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

| | | BARS | | | | | | PLATES | | | | WIRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Carbon Steel | Reinforcing | Cold Finished | Alloy Hot-rolled | Alloy Cold Drawn | Hi Str. H.R. Low Alloy | Carbon Steel | Floor Plate | Alloy | Hi Str. Low Alloy | Mfr's Bright |
| EAST | Bethlehem, Pa. | | | | 4.875 *B3* | 6.325 *B3* | 6.225 *B3* | | | | | |
| | Buffalo, N. Y. | 4.15 *B3,R3* | 4.15 *B3,R3* | 5.25 *B5* | 4.875 *B3,R3* | 6.325 *B3*<br>6.325 *B5* | 6.225 *B3* | 4.10 *B3* | | | 6.25 *B3* | 5.525 *W6* |
| | Claymont, Del. | | | | | | | 4.55 *C4* | | 5.65 *C4* | | |
| | Coatesville, Pa. | | | | | | | 4.35 *L4* | | 5.75 *L4* | | |
| | Conshohocken, Pa. | | | | | | | 4.55 *A2* | 5.15 *A2* | | 6.50 *A2* | |
| | Harrisburg, Pa. | | | | | | | 4.95 *C3* | | | | |
| | Hartford, Conn. | | | 5.75 *R3* | | 6.775 *R3* | | | | | | |
| | Johnstown, Pa. | 4.15 *B3* | 4.15 *B3* | | 4.875 *B3* | | 6.225 *B3* | 4.10 *B3* | | 5.55 *B3* | 6.25 *B3* | 5.525 *B3* |
| | Newark, N. J. | | | 5.65 *W10* | | 6.65 *W10* | | | | | | |
| | New Haven, Conn. | | | | | | | | | | | |
| | Camden, N. J. | | | 5.65 *P10* | | 6.50 *P10* | | | | | | |
| | Putnam, Conn. | | | 5.75 *W10* | | | | | | | | |
| | Sparrows Pt., Md. | | 4.15 *B3* | | | | | 4.10 *B3* | | 5.55 *B3* | 6.25 *B3* | 5.625 *B3* |
| | Palmer, Worcester, Mansfield, Mass. | | | 5.75 *B5*<br>6.10 *W11* | | 6.775 *B5* | | | | | | 5.825 *A5, W6* |
| | Readville, Mass. | | | 5.75 *C14* | | | | | | | | |
| MIDDLE WEST | Alton, Ill. | | | | | | | | | | | |
| | Ashland, Ky. | | | | | | | 4.10 *A7* | | | | |
| | Canton-Massillon, Ohio | 4.15 *R3* | | 5.20 *R2,R3* | 4.875 *R3* | 6.325 *R2,R3* | | | | | | |
| | Chicago, Joliet, Ill. | 4.15 *R3, U1, N4,W8* | 4.15 *R3,N4* | 5.20 *A5,W10, W8,B5,L2* | 4.875 *U1, W8,R3* | 6.325 *A5,W8, W10,L2,R3, B5* | | 4.10 *U1,W8* | 5.15 *U1* | 5.55 *U1* | 6.25 *U1* | 5.525 *A5, R3,N4,W1* |
| | Cleveland, Ohio | 4.15 *R3* | 4.15 *R3* | 5.20 *A5,C13* | | 6.325 *A5,C13* | | 4.10 *J3,R3* | 5.15 *J3* | | 6.25 *J3* | 5.525 *A5, R3,C13* |
| | Detroit, Mich. | 4.30 *R5*<br>4.50 *G3* | | 5.35 *R5,P8*<br>5.40 *B5*<br>5.45 *P3* | 4.975 *R5*<br>5.225 *G3* | 6.425 *R5*<br>6.475 *P8*<br>6.525 *B5,P3* | 6.875 *G3* | 4.65 *G3* | | | 7.10 *G3* | |
| | Duluth, Minn. | | | | | | | | | | | 5.525 *A5* |
| | Gary, Ind. Harbor, Crawfordsville, Indiana | 4.15 *I3, U1, Y1* | 4.15 *I3, U1, Y1* | 5.20 *R3* | 4.875 *I3, U1, Y1* | 6.325 *R3,M5* | 6.225 *U1,I3*<br>6.725 *Y1* | 4.10 *I3, U1, Y1* | 5.15 *I3* | 5.55 *U1* | 6.25 *U1,I3*<br>6.75 *Y1* | 5.625 *M4* |
| | Granite City, Ill. | | | | | | | 4.60 *G2* | | | | |
| | Kokomo, Ind. | | | | | | | | | | | 5.625 *C9* |
| | Sterling, Ill. | 4.25 *N4* | 4.25 *N4* | | | | | | | | | 5.625 *N4* |
| | Niles, Ohio<br>Sharon, Pa. | | | | | | | 4.10 *S1* | | 5.70 *S1* | 6.25 *S1* | |
| | Pittsburgh, Pa.<br>Midland, Pa. | 4.15 *J3, U1* | 4.15 *J3, U1* | 5.20 *A5, J3, W10,R3,C8* | 4.875 *U1,C11* | 6.325 *A5,C11, W10,C8* | 6.225 *J3, U1* | 4.10 *J3, U1* | 5.15 *U1* | 5.55 *U1* | 6.25 *J3, U1* | 5.525 *A5, J3,P6* |
| | Portsmouth, Ohio | | | | | | | | | | | 5.525 *P7* |
| | Weirton, Wheeling, Follansbee, W. Va. | 4.30 *W3* | | | | | | 4.40 *W3* | | | | |
| | Youngstown, Ohio | 4.15 *R3, U1, Y1* | 4.15 *R3, U1, Y1* | 5.20 *Y1,F2* | 4.875 *U1, Y1, C10* | 6.325 *Y1, C10,F2* | 6.225 *U1*<br>6.725 *Y1* | 4.10 *R3, U1, Y1* | | | 6.75 *Y1* | 5.525 *Y1* |
| WEST | Emeryville, Cal. | 4.90 *J5* | 4.90 *J5* | | | | | | | | | |
| | Fontana, Cal. | 4.85 *K1* | 4.85 *K1* | | 5.925 *K1* | | 7.475 *K1* | 4.75 *K1* | | 6.60 *K1* | 6.95 *K1* | |
| | Geneva, Utah | | | | | | | 4.10 *C7* | | | 6.25 *C7* | |
| | Kansas City, Mo. | 4.85 *S2* | 4.85 *S2* | | 5.575 *S2* | | 6.925 *S2* | | | | | 6.125 *S2* |
| | Los Angeles, Torrance, Cal. | 4.85 *B2,C7* | 4.85 *B2,C7* | 6.65 *R3* | 5.925 *B2* | | 6.925 *B2* | | | | | 6.475 *B2* |
| | Minnequa, Colo. | 4.60 *C6* | 4.75 *C6* | | | | | 4.95 *C6* | | | | 5.775 *C6* |
| | Portland, Ore. | 4.90 *O2* | | | | | | | | | | |
| | San Francisco, Niles, Pittsburg, Cal. | 4.85 *C7,P9*<br>4.90 *B2* | 4.85 *C7,P9*<br>4.90 *B2* | | | | 6.975 *B2* | | | | | 6.475 *C7* |
| | Seattle, Wash. | 4.90 *B2,N6* | 4.90 *B2,S11* | | | | 6.975 *B2* | 5.00 *B2* | | | 7.15 *B2* | |
| SOUTH | Atlanta, Ga. | 4.40 *A8* | 4.40 *A8* | | | | | | | | | 5.775 *A8* |
| | Fairfield, Ala.<br>Alabama City, Ala. | 4.15 *R3,T2* | 4.15 *R3,T2* | | | | 6.225 *T2* | 4.10 *R3,T2* | | | 6.25 *T2* | 5.525 *R3, T2* |
| | Houston, Texas<br>Ft. Worth, Texas | 4.65 *S2* | 4.65 *S2* | | 5.375 *S2* | | | 4.60 *S2* | | | | 5.925 *S2* |

# Steel Prices

*(Effective Sept. 22, 1953)*

## Key to Steel Producers

### With Principal Offices

*A1* Acme Steel Co., Chicago
*A2* Alan Wood Steel Co., Conshohocken, Pa.
*A3* Allegheny Ludlum Steel Corp., Pittsburgh
*A4* American Cladmetals Co., Carnegie, Pa.
*A5* American Steel & Wire Div., Cleveland
*A6* Angell Nail & Chaplet Co., Cleveland
*A7* Armco Steel Corp., Middletown, O.
*A8* Atlantic Steel Co., Atlanta, Ga.

*B1* Babcock & Wilcox Tube Div., Beaver Falls, Pa.
*B2* Bethlehem Pacific Coast Steel Corp., San Francisco
*B3* Bethlehem Steel Co., Bethlehem, Pa.
*B4* Blair Strip Steel Co., New Castle, Pa.
*B5* Bliss & Laughlin, Inc., Harvey, Ill.

*C1* Calstrip Steel Corp., Los Angeles
*C2* Carpenter Steel Co., Reading, Pa.
*C3* Central Iron & Steel Co., Harrisburg, Pa.
*C4* Claymont Products Dept., Claymont, Del.
*C5* Cold Metal Products Co., Youngstown
*C6* Colorado Fuel & Iron Corp., Denver
*C7* Columbia Geneva Steel Div., San Francisco
*C8* Columbia Steel & Shafting Co., Pittsburgh
*C9* Continental Steel Corp., Kokomo, Ind.
*C10* Copperweld Steel Co., Glassport, Pa.
*C11* Crucible Steel Co. of America, New York
*C12* Cumberland Steel Co., Cumberland, Md.
*C13* Cuyahoga Steel & Wire Co., Cleveland
*C14* Compressed Steel Shafting Co., Readville, Mass.

*D1* Detroit Steel Corp., Detroit
*D2* Detroit Tube & Steel Div., Detroit
*D3* Driver Harris Co., Harrison, N. J.
*D4* Dickson Weatherproof Nail Co., Evanston, Ill.

*E1* Eastern Stainless Steel Corp., Baltimore
*E2* Empire Steel Co., Mansfield, O.

*F1* Firth Sterling, Inc., McKeesport, Pa.
*F2* Fitzsimmons Steel Corp., Youngstown
*F3* Follansbee Steel Corp., Follansbee, W. Va.

*G1* Globe Iron Co., Jackson, O.
*G2* Granite City Steel Co., Granite City, Ill.
*G3* Great Lakes Steel Corp., Detroit

*H1* Hanna Furnace Corp., Detroit

*I2* Ingersoll Steel Div., Chicago
*I3* Inland Steel Co., Chicago
*I4* Interlake Iron Corp., Cleveland

*J1* Jackson Iron & Steel Co., Jackson, O.
*J2* Jessop Steel Corp., Washington, Pa.
*J3* Jones & Laughlin Steel Corp., Pittsburgh
*J4* Joslyn Mfg. & Supply Co., Chicago
*J5* Judson Steel Corp., Emeryville, Calif.

*K1* Kaiser Steel Corp., Fontana, Cal.
*K2* Keystone Steel & Wire Co., Peoria
*K3* Koppers Co., Granite City, Ill.

*L1* Laclede Steel Co., St. Louis
*L2* La Salle Steel Co., Chicago
*L3* Lone Star Steel Co., Dallas
*L4* Lukens Steel Co., Coatesville, Pa.

*M1* Mahoning Valley Steel Co., Niles, O.
*M2* McLouth Steel Corp., Detroit
*M3* Mercer Tube & Mfg. Co., Sharon, Pa.
*M4* Mid-States Steel & Wire Co., Crawfordsville, Ind.
*M5* Monarch Steel Co., Inc., Hammond, Ind.
*M6* Mystic Iron Works, Everett, Mass.

*N1* National Supply Co., Pittsburgh
*N2* National Tube Co., Pittsburgh
*N3* Niles Rolling Mill Div., Niles, O.
*N4* Northwestern Steel & Wire Co., Sterling, Ill.
*N5* Newport Steel Corp., Newport, Ky.
*N6* Northwest Steel Rolling Mill, Seattle

*O1* Oliver Iron & Steel Co., Pittsburgh
*O2* Oregon Steel Mills, Portland

*P1* Page Steel & Wire Div., Monessen, Pa.
*P2* Phoenix Iron & Steel Co., Phoenixville, Pa.
*P3* Pilgrim Drawn Steel Div., Plymouth, Mich.
*P4* Pittsburgh Coke & Chemical Co., Pittsburgh
*P5* Pittsburgh Screw & Bolt Co., Pittsburgh
*P6* Pittsburgh Steel Co., Pittsburgh
*P7* Portsmouth Div., Detroit Steel Corp., Detroit
*P8* Plymouth Steel Co., Detroit
*P9* Pacific States Steel Co., Niles, Cal.
*P10* Precision Drawn Steel Co., Camden, N. J.
*P11* Production Steel Strip Corp., Detroit

*R1* Reeves Steel & Mfg. Co., Dover, O.
*R2* Reliance Div., Eaton Mfg. Co., Massillon, O.
*R3* Republic Steel Corp., Cleveland
*R4* Roebling Sons Co., John A., Trenton, N. J.
*R5* Rotary Electric Steel Co., Detroit

*S1* Sharon Steel Corp., Sharon, Pa.
*S2* Sheffield Steel Corp., Kansas City
*S3* Shenango Furnace Co., Pittsburgh
*S4* Simonds Saw & Steel Co., Fitchburg, Mass.
*S5* Sloss Sheffield Steel & Iron Co., Birmingham
*S6* Standard Forging Corp., Chicago
*S7* Stanley Works, New Britain, Conn.
*S8* Superior Drawn Steel Co., Monaca, Pa.
*S9* Superior Steel Corp., Carnegie, Pa.
*S10* Sweet's Steel Co., Williamsport, Pa.
*S11* Seidelhuber Steel Rolling Mills, Seattle
*T1* Tonawanda Iron Div., N. Tonawanda, N. Y.
*T2* Tennessee Coal & Iron Div., Fairfield
*T3* Tennessee Products & Chem. Corp., Nashville
*T4* Thomas Strip Div., Warren, O.
*T5* Timken Steel & Tube Div., Canton, O.
*T6* Tremont Nail Co., Wareham, Mass.
*T7* Texas Steel Co., Fort Worth
*U1* United States Steel Corp., Pittsburgh
*U2* Universal-Cyclops Steel Corp., Bridgeville, Pa.
*W1* Wallingford Steel Co., Wallingford, Conn.
*W2* Washington Steel Corp., Washington, Pa.
*W3* Weirton Steel Co., Weirton, W. Va.
*W4* Wheatland Tube Co., Wheatland, Pa.
*W5* Wheeling Steel Corp., Wheeling, W. Va.
*W6* Wickwire Spencer Steel Div., Buffalo
*W7* Wilson Steel & Wire Co., Chicago
*W8* Wisconsin Steel Co., S. Chicago, Ill.
*W9* Woodward Iron Co., Woodward, Ala.
*W10* Wyckoff Steel Co., Pittsburgh
*W11* Worcester Pressed Steel Co., Worcester, Mass.
*Y1* Youngstown Sheet & Tube Co., Youngstown

## PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

| | BUTTWELD | | | | | | | | | | | | | | SEAMLESS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ½ In. | | ¾ In. | | 1 In. | | 1¼ In. | | 1½ In. | | 2 In. | | 2½–3 In. | | 2 In. | | 2½ In. | | 3 In. | | 3½–4 In. | |
| | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal |
| STANDARD T. & C. | | | | | | | | | | | | | | | | | | | | | | |
| Sparrows Pt. *B3* | 24.25 | 8.0 | 27.25 | 12.0 | 29.75 | 15.5 | 32.25 | 16.5 | 32.75 | 17.5 | 33.25 | 18.0 | 34.75 | 18.0 | | | | | | | | |
| Youngstown *R3* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | | | | | | | | |
| Fontana *K1* | 13.25 | +2.0 | 16.25 | 1.0 | 18.75 | 4.5 | 21.25 | 5.5 | 21.75 | 6.5 | 22.25 | 7.0 | 23.75 | 7.0 | | | | | | | | |
| Pittsburgh *J3* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | 15.75 | 0.0 | 19.75 | 2.5 | 22.25 | 5.0 | 23.75 | 6.5 |
| Alton, Ill. *L1* | | | | | | | | | | | | | | | | | | | | | | |
| Sharon *M3* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | | | | | | | | |
| Pittsburgh *N1* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | 15.75 | 0.0 | 19.75 | 2.5 | 22.25 | 5.0 | 23.75 | 6.5 |
| Wheeling *W5* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | | | | | | | | |
| Wheatland *W4* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | | | | | | | | |
| Youngstown *Y1* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | 15.75 | 0.0 | 19.75 | 2.5 | 22.25 | 5.0 | 23.75 | 6.5 |
| Indiana Harbor *Y1* | 25.25 | 9.0 | 28.25 | 13.0 | 30.75 | 16.5 | 33.25 | 17.5 | 33.75 | 18.5 | 34.25 | 19.0 | 35.75 | 19.0 | | | | | | | | |
| Lorain *N2* | 26.25 | 10.0 | 29.25 | 14.0 | 31.75 | 17.5 | 34.25 | 18.5 | 34.75 | 19.5 | 35.25 | 20.0 | 36.75 | 20.0 | 15.75 | 0.0 | 19.75 | 2.5 | 22.25 | 5.0 | 23.75 | 6.5 |
| EXTRA STRONG PLAIN ENDS | | | | | | | | | | | | | | | | | | | | | | |
| Sparrows Pt. *B3* | 27.75 | 13.0 | 31.75 | 17.0 | 33.75 | 20.5 | 34.25 | 19.5 | 34.75 | 20.5 | 35.25 | 21.0 | 35.75 | 20.0 | | | | | | | | |
| Youngstown *R3* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | | | | | | | | |
| Fontana *K1* | 16.75 | | 20.75 | | 22.75 | | 23.25 | | 23.75 | | 24.25 | | 24.75 | | | | | | | | | |
| Pittsburgh *J3* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | 16.25 | 0.75 | 20.75 | 3.75 | 23.75 | 6.75 | 28.75 | 9.75 |
| Alton, Ill. *L1* | | | | | | | | | | | | | | | | | | | | | | |
| Sharon *M3* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | | | | | | | | |
| Pittsburgh *N1* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | 16.25 | 0.75 | 20.75 | 3.75 | 23.75 | 6.75 | 28.75 | 9.75 |
| Wheeling *W5* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | | | | | | | | |
| Wheatland *W4* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | | | | | | | | |
| Youngstown *Y1* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | 16.25 | 0.75 | 20.75 | 3.75 | 23.75 | 6.75 | 28.75 | 9.75 |
| Indiana Harbor *Y1* | 28.75 | 14.0 | 32.75 | 18.0 | 34.75 | 21.5 | 35.25 | 20.5 | 35.75 | 21.5 | 36.25 | 22.0 | 36.75 | 21.0 | | | | | | | | |
| Lorain *N2* | 29.75 | 15.0 | 33.75 | 19.0 | 35.75 | 22.5 | 36.25 | 21.5 | 36.75 | 22.5 | 37.25 | 23.0 | 37.75 | 22.0 | 16.25 | 0.75 | 20.75 | 3.75 | 23.75 | 6.75 | 28.75 | 9.75 |

Galvanized discounts based on zinc, at 11¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only buttweld and seamless, 2¼ pts. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 4½ pts. higher discount. Buttweld jobbers' discount, 5 pct. East St. Louis zinc price now 10.0¢.

# Steel Prices

*(Effective Sept. 22, 1953)*

## CLAD STEEL

| Stainless-carbon | Plate | Sheet |
|---|---|---|
| No. 304, 20 pct. | | |
| Coatesville, Pa. *L4* | *32.7 | |
| Washington, Pa. *J2* | ..... | |
| Claymont, Del. *C4* | ..... | |
| New Castle, Ind. *I2* | ..... | 32.50 |
| Nickel-carbon | | |
| 10 pct. Coatesville, Pa. *L4* | 37.5 | |
| Inconel-carbon | | |
| 10 pct. Coatesville, Pa. *L4* | 46.10 | |
| Monel-carbon | | |
| 10 pct. Coatesville, Pa. *L4* | 38.90 | |
| Aluminized steel sheets, hot dip, Butler, Pa., *A7* | | ..... |

* Includes annealing and pickling, sandblasting.

## ELECTRICAL SHEETS

| 22 Ga. H-R cut length<br>F.o.b. Mill<br>Cents Per Lb. | Armature | Elec. | Motor | Dynamo | Transf. 72 | Transf. 65 | Transf. 58 |
|---|---|---|---|---|---|---|---|
| Beech Bottom *W5* | .... | 8.35 | 9.60 | 10.40 | 10.95 | 11.50 | 12.20 |
| Brackenridge *A3* | .... | 8.35 | 9.60 | 10.40 | 10.95 | ..... | 12.20 |
| Granite City *G2* | .... | 8.55 | 9.80 | ..... | ..... | ..... | ..... |
| Ind. Harbor *I3* | 7.85 | 8.35 | 9.60 | ..... | ..... | ..... | ..... |
| Mansfield *E2* | 7.85 | 8.35 | 9.60 | 10.40 | ..... | ..... | ..... |
| Newport, Ky. *N5* | 7.85 | 8.35 | 9.60 | 10.40 | 10.95 | ..... | ..... |
| Niles, O. *N3* | 7.85 | 8.35 | ..... | ..... | ..... | ..... | ..... |
| Vandergrift *U1* | 7.85 | 8.35 | 9.60 | 10.40 | 10.95 | 11.50 | 12.20 |
| Warren, O. *R3* | 7.85 | 8.35 | 9.60 | ..... | ..... | ..... | ..... |
| Zanesville *A7* | 7.85 | 8.35 | 9.60 | 10.40 | 10.95 | 11.50 | 12.20 |

## CAST IRON WATER PIPE

| | Per Net Ton |
|---|---|
| 6 to 24-in., del'd Chicago | $110.30 to $113.80 |
| 6 to 24-in., del'd N.Y. | 113.50 to 114.50 |
| 6 to 24-in., Birmington | 96.50 to 101.00 |
| 6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less | $128.00 to $130.00 |

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

## TOOL STEEL

*F.o.b. mill*

| W | Cr | V | Mo | Co | Base per lb |
|---|---|---|---|---|---|
| 18 | 4 | 1 | — | — | $1.66 |
| 18 | 4 | 1 | — | 5 | 2.34 |
| 18 | 4 | 2 | — | — | 1.82 |
| 1.5 | 4 | 1.5 | 8 | — | .895 |
| 6 | 4 | 2 | 6 | — | 1.065 |

| | |
|---|---|
| High-carbon chromium | .70 |
| Oil hardened manganese | .39 |
| Special carbon | .355 |
| Extra carbon | .30 |
| Regular carbon | .25 |

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

## MERCHANT WIRE PRODUCTS

| F.o.b. Mill | Standard & Coated Nails Col | Woven Wire Fence 9–15½ ga. Col | "T" Fence Posts Col | Single Loop Bale Ties Col | Twisted Barbless Wire Col | Galv. Barbed Wire Col | Merch. Wire Ann'ld ¢/lb. | Merch. Wire* Galv. ¢/lb. |
|---|---|---|---|---|---|---|---|---|
| Alabama City *R3* | 131 | 140 | ... | 149 | ... | 153 | 6.675 | 7.075 |
| Aliquippa, Pa. *J3* | 131 | 143 | ... | ... | ... | 150 | 6.675 | 7.20 |
| Atlanta *A8* | 134 | 146 | ... | 152 | ... | 159 | 6.925 | 7.475 |
| Bartonville *K2* | 131 | 143 | ... | ... | ... | 156 | ... | ... |
| Buffalo *W6* | ... | ... | ... | ... | ... | ... | ... | ... |
| Chicago, Ill. *N4* | 131 | 143 | ... | 149 | 156 | 156 | 6.675 | 7.225 |
| Cleveland *A6* | 137 | ... | ... | ... | ... | ... | ... | ... |
| Cleveland *A5* | ... | ... | ... | ... | ... | ... | 6.675 | ... |
| Crawfrdsvl. *M4* | 133 | 145 | ... | 151 | ... | 153 | 6.775 | 7.325 |
| Donora, Pa. *A5* | 131 | 140 | ... | 149 | ... | 153 | 6.675 | 7.075 |
| Duluth *A5* | 131 | 140 | 138 | 149 | ... | 153 | 6.675 | 7.075 |
| Fairfield, Ala. *T2* | 131 | 140 | ... | 149 | ... | 153 | 6.675 | 7.075 |
| Galveston *D4* | 139 | 148 | ... | ... | ... | ... | ... | ... |
| Houston *S2* | 139 | 151 | ... | ... | ... | 164 | 7.075 | 7.625 |
| Johnstn., Pa., *B3* | 131 | 143 | 145 | ... | 156 | 156 | 6.675 | 7.225 |
| Joliet, Ill., *A5* | 131 | 140 | ... | 149 | ... | 153 | 6.675 | 7.075 |
| Kokomo, Ind. *C9* | 133 | 142 | ... | 151 | ... | 155 | 6.775 | 7.175 |
| Los Angeles *B2* | ... | ... | ... | ... | ... | ... | 7.625 | ... |
| Kansas City *S2* | 143 | 155 | ... | 161 | ... | 168 | 7.275 | 7.825 |
| Minnequa *C6* | 136 | ... | 145 | 154 | 162 | 162 | 6.925 | 7.325 |
| Monessen *P6* | 131 | 145 | ... | ... | ... | 157 | 6.675 | 7.225 |
| Moline, Ill. *R3* | ... | ... | 145 | ... | ... | ... | ... | ... |
| Pittsburg, Cal. *C7* | 150 | 163 | ... | 173 | 173 | 173 | 7.625 | 8.025 |
| Portsmouth *P7* | 132 | ... | ... | ... | ... | ... | 6.575 | ... |
| Rankin, Pa. *A5* | 131 | 140 | ... | ... | ... | 153 | 6.675 | 7.075 |
| So. Chicago *R3* | 131 | 140 | 145 | 149 | ... | 153 | 6.675 | 7.075 |
| S. San Fran. *C6* | ... | ... | ... | ... | ... | 173 | ... | ... |
| Sparrows Pt. *B3* | 133 | ... | ... | 151 | 158 | 158 | 6.775 | 7.325 |
| Struthers, O. *Y1* | ... | ... | ... | ... | ... | ... | 6.675 | 7.175 |
| Worcester *A5* | 137 | ... | ... | ... | ... | ... | 6.975 | ... |
| Williamsport, Pa. *S10* | 133 | ... | 158 | ... | ... | ... | ... | ... |

Cut Nails, carloads, base $8.00 per keg (less 20¢ to jobbers), at Conshohocken, Pa. (*A2*).

* Alabama City and So. Chicago don't include zinc extra. Galvanized products computed with zinc at 11.0¢ per lb.

## WARE-HOUSES

Base price, f.o.b., dollars per 100 lb.

| Cities | City Delivery Charge | Sheets: Hot-Rolled | Sheets: Cold-Rolled (15 gage) | Sheets: Galvanized (10 gage) | Strip: Hot-Rolled | Strip: Cold-Rolled | Plates | Shapes: Standard Structural | Bars: Hot-Rolled | Bars: Cold-Finished | Alloy Bars: Hot-Rolled A 4615 As rolled | Alloy Bars: Hot-Rolled A 4140 Annealed | Alloy Bars: Cold-Drawn A 4615 As Rolled | Alloy Bars: Cold-Drawn A 4140 Annealed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baltimore | $.20 | 6.20 | 7.64 | 7.81[3] | 7.00 | ..... | 6.85 | 6.98 | 6.86 | 8.17 | ..... | ..... | ..... | ..... |
| Birmingham | .15 | 6.10 | 7.00 | 8.00[4] | 6.30 | ..... | 6.35 | 6.35 | 6.15 | 8.75 | ..... | ..... | ..... | ..... |
| Boston | .20 | 6.89 | 7.93 | 9.23 | 7.13 | 9.23–9.35[2] | 7.13 | 7.06 | 6.87 | 8.35 | 12.40 | 12.25–12.28 | ..... | 14.75–14.78 |
| Buffalo | .20 | 6.18–6.20 | 7.15 | 9.00–9.01 | 6.65–6.79 | ..... | 6.65–6.68 | 6.55–6.59 | 6.35–6.65 | 7.70 | ..... | 12.17–15.35 | 14.45 | 14.55 |
| Chicago | .20 | 6.18 | 7.12 | 8.05 | 6.42 | ..... | 6.33–6.38 | 6.46 | 6.28 | 7.30 | ..... | 11.75 | ..... | 14.25 |
| Cincinnati | .15 | 6.51 | 7.19 | 8.47 | 6.72 | ..... | 6.85 | 6.93 | 6.58 | 7.66 | ..... | 12.17 | ..... | 14.87 |
| Cleveland | .20 | 6.18 | 7.12 | 8.50 | 6.58 | ..... | 6.50 | 6.79 | 6.34 | 7.65 | ..... | 11.89 | ..... | 14.39 |
| Denver | ..... | 7.95 | 8.85 | 10.10 | 8.20 | 9.55 | 7.95 | 7.95 | 8.05 | 9.05 | ..... | ..... | ..... | 15.25–15.75 |
| Detroit | .20 | 6.35–6.45 | 7.25–7.32 | 8.34 | 6.30–7.31 | 7.36–8.35 | 6.53–6.85 | 6.93 | 6.56–6.57 | 7.60–7.69 | 12.27 | 12.12 | 14.52 | 13.44–14.62 |
| Houston | .20 | 7.15 | 7.85 | ..... | 7.45 | ..... | 7.20 | 7.35 | 7.45 | 9.85 | ..... | 12.95 | ..... | ..... |
| Kansas City | .20 | 6.85 | 7.79 | 8.72 | 7.09 | ..... | 7.05 | 7.13 | 6.95 | 8.08 | ..... | ..... | ..... | ..... |
| Los Angeles | .20 | 7.25 | 9.00 | 9.60 | 7.55 | 10.75–11.30 | 7.20 | 7.35 | 7.15–7.25 | 9.10–9.75 | 13.40–13.55 | 13.05 | 15.75 | 15.85–16.05 |
| Memphis | .10 | 6.79 | 7.69 | ..... | 6.90 | ..... | 7.01 | 7.09 | 6.88 | 7.89 | ..... | ..... | ..... | ..... |
| Milwaukee | .20 | 6.35 | 7.29 | 8.22 | 6.59 | ..... | 6.50–6.55 | 6.63 | 6.45 | 7.57 | ..... | 11.92 | ..... | 14.42 |
| New Orleans | .15 | 6.51–6.66 | 7.56 | 8.25 | 6.63–6.78 | ..... | 6.73–6.88 | 6.81–6.96 | 6.60–6.75 | 8.42–8.57 | ..... | ..... | ..... | ..... |
| New York | .30 | 6.78 | 7.75 | 8.77 | 7.16 | 9.05 | 6.99 | 6.90 | 7.06 | 8.53–8.43[5] | 11.99–12.29 | 10.39–12.14 | 14.04–14.54 | 12.64–14.64 |
| Norfolk | .20 | 6.90 | ..... | ..... | 7.20 | ..... | 7.15 | 7.20 | 7.20 | 8.50 | ..... | ..... | ..... | ..... |
| Philadelphia | .25 | 6.53 | 7.55–8.25 | 8.35 | 7.02 | ..... | 6.63 | 6.67 | 6.87 | 8.24 | 12.04 | 11.89 | 14.29 | 14.39 |
| Pittsburgh | .20 | 5.95–6.18 | 6.82 | 8.30–8.60 | 6.20–6.55 | ..... | 6.03–6.33 | 6.07–6.46 | 5.98–6.28 | 7.65 | ..... | 11.45–11.75 | ..... | 13.75–14.25 |
| Portland | .10 | 7.90–8.00 | 9.30–9.80 | 9.95–10.00 | 7.90 | ..... | 7.55 | 7.50 | 7.60 | 10.05 | ..... | ..... | ..... | ..... |
| Salt Lake City | .20 | 9.05 | 10.80 | 10.65 | 9.35 | ..... | 8.70 | 8.65 | 9.20 | 11.25 | ..... | ..... | ..... | ..... |
| San Francisco | .20 | 7.35 | 8.70 | 9.90–10.15 | 7.60 | 10.35 | 7.20 | 7.25 | 7.15 | 9.75–9.85 | 13.55 | 12.80–13.05 | 15.50 | 15.55–16.05 |
| Seattle | .20 | 8.15 | 8.70 | 9.95–10.10 | 8.02 | ..... | 7.59 | 7.50 | 7.58 | 10.13 | ..... | 13.40 | ..... | 16.00 |
| St. Louis | .20 | 6.48 | 7.42 | 8.35 | 6.72 | ..... | 6.73 | 6.86 | 6.58 | 7.70 | 12.20 | 12.05 | 14.45 | 14.30–14.55 |
| St. Paul | .15 | 6.84 | 7.78 | 8.71 | 7.08 | ..... | 6.99 | 7.12 | 6.94 | 8.06 | ..... | 12.19 | ..... | ..... |

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1)500 to 1499 lb. (2)20,000 lb or over. (3)450 to 1499 lb. (4)500 to 9999 lb. (5)1000 lb or over.

## C-R SPRING STEEL

| Cents Per Lb. F.o.b. Mill | CARBON CONTENT 0.26–0.40 | 0.41–0.60 | 0.61–0.80 | 0.81–1.05 | 1.06–1.35 |
|---|---|---|---|---|---|
| Bridgeport, Conn. *S7* | 6.15 | 8.00 | 8.60 | 10.55 | 12.85 |
| Carnegie, Pa. *S9* | ..... | 8.00 | 8.60 | 10.55 | 12.85 |
| Cleveland *A5* | 5.45 | 7.65 | 8.60 | 10.55 | 12.85 |
| Detroit *D2* | 6.05 | 8.25 | 8.85 | ... | ... |
| Harrison, N. J. *C11* | ... | ... | 8.90 | 10.85 | 13.15 |
| New Castle, Pa. *B4* | 5.80 | 8.00 | 8.60 | ... | ... |
| New Haven, Conn. *D1* | 6.70 | 7.95 | 8.55 | 10.50 | ... |
| Sharon, Pa. *S1* | 5.80 | 8.00 | 8.60 | 10.55 | 12.85 |
| Trenton *R4* | ..... | 7.95 | 8.55 | 10.50 | 12.80 |
| Weirton, W. Va. *W3* | 5.80 | 8.00 | 8.60 | 10.55 | 12.85 |
| Worcester, Mass. *A5* | 5.75 | 7.95 | 8.90 | 10.85 | 13.15 |
| Youngstown *C5* | ..... | 8.00 | 8.60 | 10.55 | 12.85 |

* Sold on Pittsburgh base.

## BOILER TUBES

| $ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill | Size OD-In. | Size B.W. Ga. | Seamless H.R. | Seamless C.D | Elec. Weld H.R. | Elec. Weld C.D |
|---|---|---|---|---|---|---|
| Babcock & Wilcox | 2 | 13 | 30.08 | 36.28 | 26.51 | 31.90 |
| | 2½ | 12 | 40.51 | 48.86 | 35.70 | 43.07 |
| | 3 | 12 | 45.92 | 55.39 | ... | 49.73 |
| | 3½ | 11 | 53.60 | 64.65 | 48.13 | 58.06 |
| | 4 | 10 | 65.91 | 79.50 | 63.92 | 77.10 |
| National Tube | 2 | 13 | ..... | 32.98 | 24.88 | ..... |
| | 2½ | 12 | 36.82 | 44.41 | 33.50 | ..... |
| | 3 | 12 | 42.52 | 51.28 | 38.69 | ..... |
| | 3½ | 11 | 49.63 | 59.87 | 45.16 | ..... |
| | 4 | 10 | 65.91 | 79.50 | 59.97 | ..... |
| Pittsburgh Steel | 2 | 13 | 27.34 | 32.98 | ..... | ..... |
| | 2½ | 12 | 36.82 | 44.41 | ..... | ..... |
| | 3 | 12 | 42.52 | 51.28 | ..... | ..... |
| | 3½ | 11 | 49.63 | 59.87 | ..... | ..... |
| | 4 | 10 | 65.91 | 79.50 | ..... | ..... |

# Miscellaneous Prices

*(Effective Sept. 22, 1953)*

## RAILS, TRACK SUPPLIES

| F.o.b. Mill Cents Per Lb | No. 1 Std. Rails | Light Rails | Joint Bars | Track Spikes | Screw Spikes | Tie Plates | Track Bolts Treated |
|---|---|---|---|---|---|---|---|
| Bessemer *U1* | 4.325 | 5.20 | 5.275 | .... | .... | .... | .... |
| Chicago *R3* | .... | .... | .... | 7.05 | .... | .... | .... |
| Cleveland *R3* | .... | .... | .... | .... | .... | .... | .... |
| Ensley *T2* | 4.325 | 5.20 | .... | .... | .... | .... | .... |
| Fairfield *T2* | .... | 5.20 | .... | .... | .... | 5.125 | .... |
| Gary *U1* | 4.325 | 5.20 | .... | .... | .... | 5.125 | .... |
| Ind. Harbor *I3* | 4.325 | .... | 5.275 | 7.05 | .... | 5.125 | .... |
| Johnstown *B3* | .... | 5.20 | .... | .... | .... | .... | .... |
| Joliet *U1* | .... | 5.20 | 5.275 | .... | .... | .... | .... |
| Kansas City *S2* | .... | .... | .... | 7.30 | .... | .... | 11.00 |
| Lackawanna *B3* | 4.325 | 5.20 | 5.275 | .... | .... | 5.125 | .... |
| Lebanon *B3* | .... | .... | .... | 7.05 | 10.50 | .... | 11.00 |
| Minnequa *C6* | 4.325 | 5.70 | .... | 7.05 | 11.55 | .... | 10.35 |
| Pittsburgh *O1* | .... | .... | .... | .... | 10.50 | .... | 11.00 |
| Pittsburgh *P5* | .... | .... | .... | .... | 10.50 | .... | 11.00 |
| Pittsburgh *J3* | .... | .... | .... | 7.05 | .... | .... | .... |
| Pitt'g, Cal. *C7* | .... | .... | .... | .... | .... | 5.275 | .... |
| Seattle *B2* | .... | .... | .... | 7.55 | .... | 5.275 | 11.50 |
| Steelton *B3* | 4.325 | .... | 5.275 | .... | .... | 5.125 | .... |
| Struthers *Y1* | .... | .... | .... | .... | .... | .... | .... |
| Torrance *C7* | .... | .... | .... | .... | .... | 5.275 | .... |
| Youngstown *R3* | .... | .... | .... | 7.05 | .... | .... | .... |

## LAKE SUPERIOR ORES

*51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953 to end of season.*

| | Gross Ton |
|---|---|
| Openhearth lump | $11.15 |
| Old range, bessemer | 10.30 |
| Old range, nonbessemer | 10.15 |
| Mesabi, bessemer | 10.05 |
| Mesabi, nonbessemer | 9.90 |
| High phosphorus | .... |

Prices based on upper Lake rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

## COKE

| Furnace, beehive (f.o.b. oven) | Net-Ton |
|---|---|
| Connellsville, Pa. | $14.25 to $14.50 |
| Foundry beehive (f.o.b. oven) | |
| Connellsville, Pa. | $16.50 to $17.00 |
| Foundry, oven coke | |
| Buffalo, del'd | $28.08 |
| Chicago, f.o.b. | 24.50 |
| Detroit, f.o.b. | 25.50 |
| New England, del'd | 26.05 |
| Seaboard, N. J., f.o.b. | 24.00 |
| Philadelphia, f.o.b. | 23.95 |
| Swedeland, Pa., f.o.b. | 23.85 |
| Painesville, Ohio, f.o.b. | 24.00 |
| Erie, Pa., f.o.b. | 25.00 |
| Cleveland, del'd | 27.43 |
| Cincinnati, del'd | 26.56 |
| St. Paul, f.o.b. | 23.75 |
| St. Louis, f.o.b. | 26.00 |
| Birmingham, del'd | 23.21 |
| Lone Star, Tex., f.o.b. | 18.50 |

## ELECTRODES

*Cents per lb, f.o.b. plant threaded electrodes with nipples, unboxed*

| Diam. in in. | Length in in. | Cents Per lb. |
|---|---|---|
| | GRAPHITE | |
| 24 | 84 | 20.50 |
| 18, 20 | 72 | 20.50 |
| 12, 14 | 72 | 20.50 |
| 7 to 10 | 60 | 21.00 |
| 6 | 60 | 23.25 |
| 4 | 40 | 26.00 |
| 3 | 40 | 27.25 |
| 2½ | 30 | 28.00 |
| 2 | 24 | 43.50 |
| | CARBON | |
| 40 | 100, 110 | 8.95 |
| 35 | 110 | 8.95 |
| 30 | 110 | 8.95 |
| 24 | 72 to 84 | 9.10 |
| 20 | 90 | 8.95 |
| 17 | 72 | 9.10 |
| 14 | 72 | 9.50 |
| 10, 12 | 60 | 10.30 |
| 8 | 60 | 10.55 |

## BOLTS, NUTS, RIVETS, SCREWS

### Consumer Prices

*(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)*

**Nuts, Hot Pressed, Cold Punched—Sq.**

*Pct Off List*

| | Less Keg Reg. | K. | Less Keg Hvy. | K. |
|---|---|---|---|---|
| ⅛ in. & smaller | +2 | 15 | +2 | 18 |
| 9/16 in. & ⅝ in. | +7 | 11 | +32* | +10* |
| ¾ in. to 1½ in. inclusive | +8 | 10 | +27** | +6** |
| 1⅝ in. & larger | +9 | 9 | +27 | +6 |

* 9/16 to ¾ in.
** ⅞ to 1½ in.

**Nuts, Hot Pressed—Hexagon**

| | | | | |
|---|---|---|---|---|
| ⅛ in. & smaller | 11 | 26 | 8 | 23 |
| 9/16 in. & ⅝ in. | 2 | 18 | +20 | net |
| ¾ in. to 1½ in. inclusive | +6 | 12 | +25 | +4 |
| 1⅝ in. & larger | +8 | 10 | +25 | +4 |

**Nuts, Cold Punched—Hexagon**

| | | | | |
|---|---|---|---|---|
| ⅛ in. & smaller | 11 | 26 | 8 | 23 |
| 9/16 in. & ⅝ in. | 9 | 24 | +2 | 15 |
| ¾ in. to 1½ in. inclusive | +1 | 16 | +9 | 9 |
| 1⅝ in. & larger | +16 | 3 | +20 | net |

**Nuts, Semi-Finished—Hexagon**

| | | | | |
|---|---|---|---|---|
| ⅛ in. & smaller | 23 | 36 | 14 | 28 |
| 9/16 in. & ⅝ in. | 18 | 32 | 4 | 20 |
| ¾ in. to 1½ in. inclusive | 8 | 23 | +8 | 10 |
| 1⅝ in. & larger | +14 | 5 | +20 | net |
| | Light | | | |
| 7/16 in. & smaller | 33 | 43 | | |
| ½ in. thru ⅝ in. | 26 | 37 | | |
| ¾ in. to 1½ in. inclusive | 18 | 30 | | |

**Stove Bolts** *Pct Off List*

Packaged, steel, plain finished 44½—10
Packaged, plain finish 25½—10
Bulk, plain finish** 59*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

**Rivets** *Base per 100 lb*

½ in. & larger $8.90

*Pct Off List*

7/16 in. and smaller 30

**Cap and Set Screws**
*(In bulk)* *Pct Off List*

| | |
|---|---|
| Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright | 40 |
| ¾ in. thru 1 in. up to & including 6 in. | 24 |
| ¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat | 43 |
| ¾ in. thru 1 in. up to & including 6 in. | 33 |
| Milled studs | 17 |
| Flat head cap screws, listed sizes | 12 |
| Fillister head cap, listed sizes | 7 |
| Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter | 37 |

**Machine and Carriage Bolts**

*Pct Off List*

| | Less Case | C. |
|---|---|---|
| ½ in. & smaller x 6 in. & shorter | 4 | 20 |
| 9/16 in. & ⅝ in. x 6 in. & shorter | 5 | 21 |
| ¾ in. & larger x 6 in. & shorter | 3 | 19 |
| All diam. longer than 6 in. | +4 | 13 |
| Lag, all diam. x 6 in. & shorter | 12 | 27 |
| Lag, all diam. longer than 6 in. | 8 | 23 |
| Plow bolts | 30 | |

## REFRACTORIES

**Fire Clay Brick** *Carloads, per 1000*

| | |
|---|---|
| First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00) | $109.00 |
| No. 1 Ohio | 102.00 |
| Sec. quality, Pa., Md., Ky., Mo., Ill. | 102.00 |
| No. 2 Ohio | 93.00 |
| Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) | 16.00 |

**Silica Brick**

| | |
|---|---|
| Mt. Union, Pa., Ensley, Ala. | $115.00 |
| Childs, Hays, Pa. | 120.00 |
| Chicago District | 125.00 |
| Western Utah | 131.00 |
| California | 138.00 |
| Super Duty Hays, Pa., Athens, Tex., Windham | 132.00 |
| Curtner, Calif. | 150.00 |
| Silica cement, net ton, bulk, Eastern (except Hays, Pa.) | 19.00 |
| Silica cement, net ton, bulk, Hays, Pa. | 21.00 |
| Silica cement, net ton, bulk, Chicago District, Ensley, Ala. | 20.00 |
| Silica cement, net ton, bulk, Utah and Calif. | 28.50 |

**Chrome Brick** *Per net ton*

| | |
|---|---|
| Standard chemically bonded Balt. | $86.00 |
| Standard chemically bonded, Curtner, Calif. | 96.25 |
| Burned, Balt. | 80.00 |

**Magnesite Brick**

| | |
|---|---|
| Standard Baltimore | $109.00 |
| Chemically bonded, Baltimore | 97.50 |

**Grain Magnesite** *St. ⅜-in. grains*

| | |
|---|---|
| Domestic, f.o.b. Baltimore in bulk fines removed | $64.40 |
| Domestic, f.o.b. Chewalah, Wash., in bulk | 38.00 |
| in sacks | 43.75 |

**Dead Burned Dolomite** *Per net ton*

| | |
|---|---|
| F.o.b., bulk, producing points in: | |
| Pa., W. Va., Ohio | $13.75 |
| Midwest | 13.85 |
| Missouri Valley | 13.65 |
| Nario, Bettsville, Ohio | 14.50 |

## FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective $CaF_2$ content

| | |
|---|---|
| 72½% | $44.00 |
| 70% or more | 42.50 |
| 60% or less | 38.00 |

## METAL POWDERS

*Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.*

| | |
|---|---|
| Swedish sponge iron, c.i.f. New York, ocean bags | 11.25¢ |
| Canadian sponge iron, del's. in East | 12.0¢ |
| Domestic sponge iron, 98+% Fe, carload lots | 15.5¢ to 17.0¢ |
| Electrolytic iron, annealed, 99.5+% Fe | 44.0¢ |
| Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe | 60.0¢ |
| Hydrogen reduced iron, minus 300 mesh, 98+% Fe. | 53.0¢ to 80.0¢ |
| Carbonyl iron, size 5 to 10 mieron, 98%, 99.8+% Fe | 83.0¢ to $1.48 |
| Aluminum | 31.5¢ |
| Brass, 10 ton lots | 30.00¢ to 33.25¢ |
| Copper, electrolytic | 43.50¢ |
| Copper, reduced | 43.50¢ |
| Cadmium, 100-199 lb | 95¢ plus metal value |
| Chromium, electrolytic, 99% min., and quantity, del'd | $3.50 |
| Lead | 21.75¢ |
| Manganese | 57.0¢ |
| Molybdenum, 99% | $2.75 |
| Nickel, unannealed | 88.0¢ |
| Nickel, annealed | 95.0¢ |
| Nickel, spherical, unannealed | 92.0¢ |
| Silicon | 33.5¢ |
| Solder powder | 7.0¢ to 9.0¢ plus met. value |
| Stainless steel, 302 | 83.9¢ |
| Stainless steel, 316 | $1.10 |
| Tin | 14.04¢ plus metal value |
| Tungsten, 99% (65 mesh) | $5.35 |
| Zinc, 10 ton lots | 23.0¢ to 30.5¢ |

# Ferroalloy Prices

*(Effective Sept. 22, 1953)*

### Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.

65-72% Cr, 2% max. Si.

| | | | |
|---|---|---|---|
| 0.025% C | 34.50 | 0.20% C | 33.50 |
| 0.06% C | 34.50 | 0.50% C | 33.25 |
| 0.10% C | 34.00 | 1.00% C | 33.00 |
| 0.15% C | 33.75 | 2.00% C | 32.75 |

65-69% Cr, 4-9% C ..... 24.75
62-66% Cr, 4-6% C, 6-9% Si ..... 25.60

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads ..... 25.85
Ton lots ..... 28.00
Less ton lots ..... 29.50

### High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C ..... $1.18
0.50% max. C ..... 1.14
9 to 11% C ..... 1.11

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, bulk 2-in. x down, 25.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 25.90¢ per lb contained Cr plus 12.69¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, lump delivered.

30-33% Cr, 60-65% Si, 3.00% max. Fe.

Carloads ..... 19.00
Ton lots ..... 22.10
Less ton lots ..... 23.60

### Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads ..... 20.00
Ton lots ..... 22.30
Less ton lots ..... 23.30

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots ..... 17.50
Less ton lots ..... 19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots ..... 16.50
Less ton lots ..... 17.75

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed ..... 17.50
Ton lots to carload packed ..... 18.50
Less ton lots ..... 20.00

### Ferromanganese

Maximum contract base price, f.o.b., lump size:

| Producing Point | Base Mn Content | Cents per lb (Contained Mn) |
|---|---|---|
| Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore. | 76-80% | 13.15 (Per lb of alloy) |
| Clairton, Pa. | 74-76% | 10.00 |
| Johnstown, Pa. | 74-76% | 10.00 |
| Sheridan, Pa. | 74-76% | 10.00 |

Add or subtract 0.1¢ for each 1% Mn above or below base content.

Briquets—delivered, 66 pct Mn.

Carloads, bulk ..... 13.50
Ton lots, packed ..... 14.05

### Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

| Manganese | Silicon | |
|---|---|---|
| 16 to 19% | 3% max. | $84.00 |
| 19 to 21% | 3% max. | 86.00 |
| 21 to 23% | 3% max. | 88.50 |
| 23 to 25% | 3% max. | 91.00 |

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed ..... 36.95
Ton lots ..... 38.45

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads ..... 31.50
Ton lots ..... 33.50
Less ton lots ..... 35.50
Premium for hydrogen-removed metal ..... 1.50

### Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

| | Carloads | Ton | Less |
|---|---|---|---|
| 0.07% max. C, 0.06% P, 90% Mn | 30.00 | 31.85 | 33.05 |
| 0.07% max. C | 27.95 | 29.80 | 31.00 |
| 0.15% max. C | 27.45 | 29.30 | 30.50 |
| 0.30% max. C | 26.95 | 28.80 | 30.00 |
| 0.50% max. C | 26.45 | 28.30 | 29.50 |
| 0.75% max. C, 80-85% Mn, 5.0-7.0% Si | 23.45 | 25.30 | 26.50 |

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk ..... 11.40
Ton lots ..... 13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet ..... 12.65
Ton lots, packed ..... 14.25

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $95.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50% Mn over 1%.

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe ..... 18.00
97% Si, 1% Fe ..... 18.50

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk ..... 6.95
Ton lots ..... 8.55

### Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

| | | | |
|---|---|---|---|
| 25% Si | 20.00 | 75% Si | 14.30 |
| 50% Si | 12.40 | 85% Si | 15.55 |
| 65% Si | 13.60 | 90.95% Si | 17.00 |

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

| | Cast | Turnings | Distilled |
|---|---|---|---|
| Ton lots | $2.05 | $2.95 | $3.75 |
| Less ton lots | 2.40 | 3.30 | 4.55 |

### Ferrovanadium

35-55% contract basis, delivered, per pound, contained V.

Openhearth ..... $3.00-$3.10
Crucible ..... 3.10- 3.20
High speed steel (Primos) .. 3.20- 3.25

### Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads ..... 9.90
Ton lots ..... 11.30

### Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ..... $1.15

### Ferrocolumbium, 50-60% 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots ..... $6.40
Less ton lots ..... 6.45

### Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta ..... $4.75

### Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo ..... $1.32

### Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton ..... $65.00
10 tons to less carload ..... $75.00

### Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ..... $1.35

### Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ..... $1.50
Less ton lots ..... 1.55

### Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ..... $177.00

### Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ..... $4.45

### Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ..... $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. ..... $1.12

### Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢

### Vanadium Pentoxide, 86-89% $V_2O_5$ contract basis, per pound contained $V_2O_5$ ..... $1.28

### Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots ..... 21.00¢

### Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk ..... 8.00¢

## Boron Agents

### Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B ..... $5.35

### Bortam, f.o.b. Niagara Falls

Ton lots, per pound ..... 45¢
Less ton lots, per pound ..... 50¢

### Corbortam, Ti 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed

Ton lots, per pound ..... 10.00¢

### Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots... F.o.b. Wash., Pa.; 100 lb up

| | |
|---|---|
| 10 to 14% B | $1.20 |
| 14 to 10% B | .85 |
| 19% min. B | 1.20 |
| | 1.50 |

### Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

| | |
|---|---|
| No. 1 | $1.00 |
| No. 6 | 65¢ |
| No. 79 | 50¢ |

### Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in x D, del'd

Ton lots ..... $1.46
Less ton lots ..... 1.57

### Nickel-Boron, 15-18%, B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered

Less ton lots ..... $2.05

### Silenz, contract basis, delivered.

Ton lots ..... 45.00¢

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1—6250 HP GEAR DRIVE, ratio 368 to 84.4 RPM.
1—1200 HP GEAR DRIVE, ratio 288 to 29.5 RPM.
1—34" x 16' ROLL GRINDER, bed 26' long, with A.C. and D.C. motors and controls.
1—42" ROLL TURNING LATHE, bed 20' enclosed headstick, piano rest, D.C. motor drive, 20 H.P., 500/1500 RPM.
1—54" MESTA BAR SHEAR, stroke 6½", capacity 3—10" x 2½" bars.
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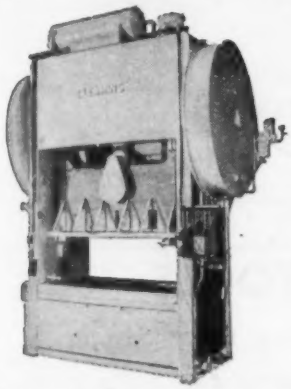

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|---|---|---|---|---|
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| 26 | 1500 | West. | 525/600 | 600 RPM |
| 33 | 1500 | Al. Ch. | 525/600 | 675 RPM |
| 4 | 1200 | Al. Ch. | 525/600 | 650 RPM |
| 2 | 900 | Elliott | 230 | 300/195 RPM |
| 8 | 800 | West. | 525/600/600/900 | RPM |
| 1 | 650 | Cr. Wh. | 230 | 475/720 RPM |
| 1 | 500 | West | 230 | 250/500 RPM |
| 1 | 400 | G.E. | 230 | 180/360 RPM |
| 7 | 400 | Elliott (new) | 230 | 400/800 RPM |
| 5 | 400 | West. (new) | 230 | 375/750 RPM |
| 2 | 850 | Cr. Wh. | 230 | 400/800 RPM |
| 1 | 200 | Cr. Wh. | 230 | 500/750 RPM |
| 1 | 300 | Cr. Wh | 230 | 375/750 RPM |

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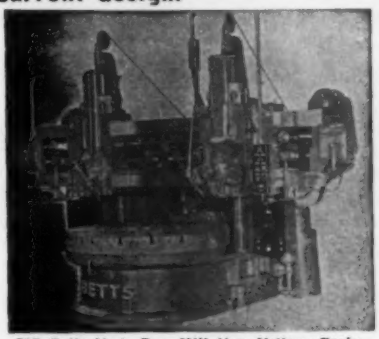

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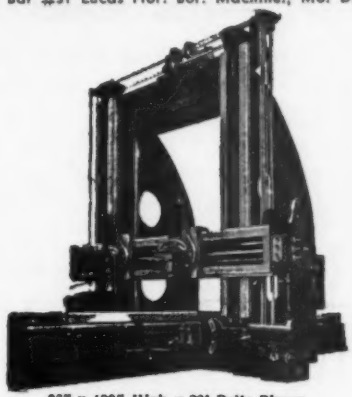

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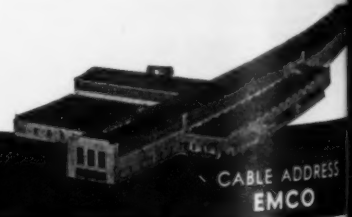

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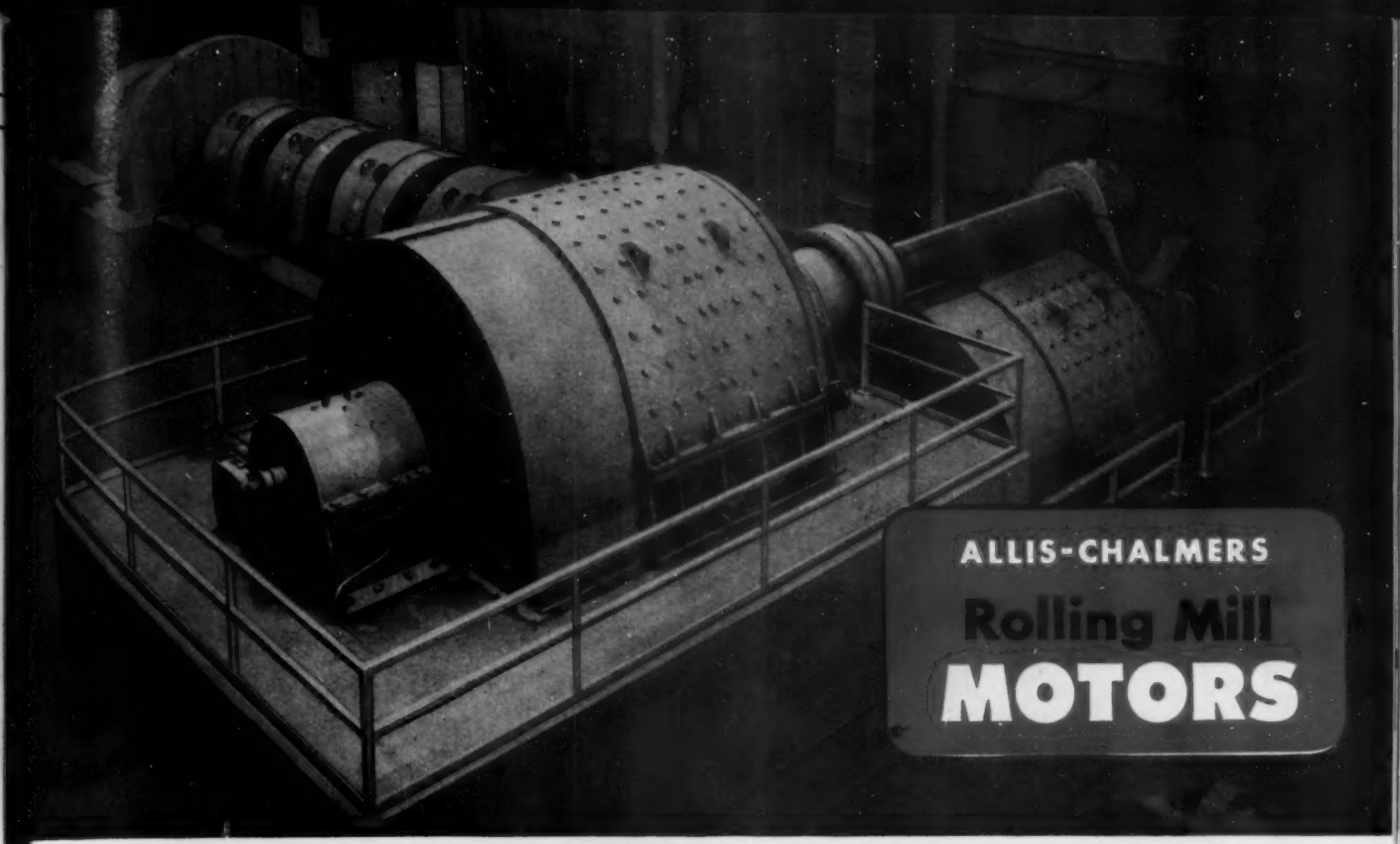


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**At left,** Granite City Steel's new blooming mill viewed from the main pulpit.

**Over-all view** of motor room (right) shows ac control and switchgear at left; constant and variable voltage m-g sets in center; dc control panels and *Regulex* exciter sets at right; and the two 5000-hp twin-drive motors and m-g sets in background—all supplied by Allis-Chalmers.

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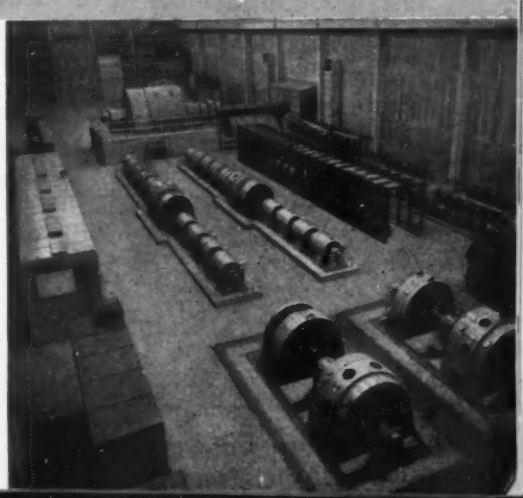

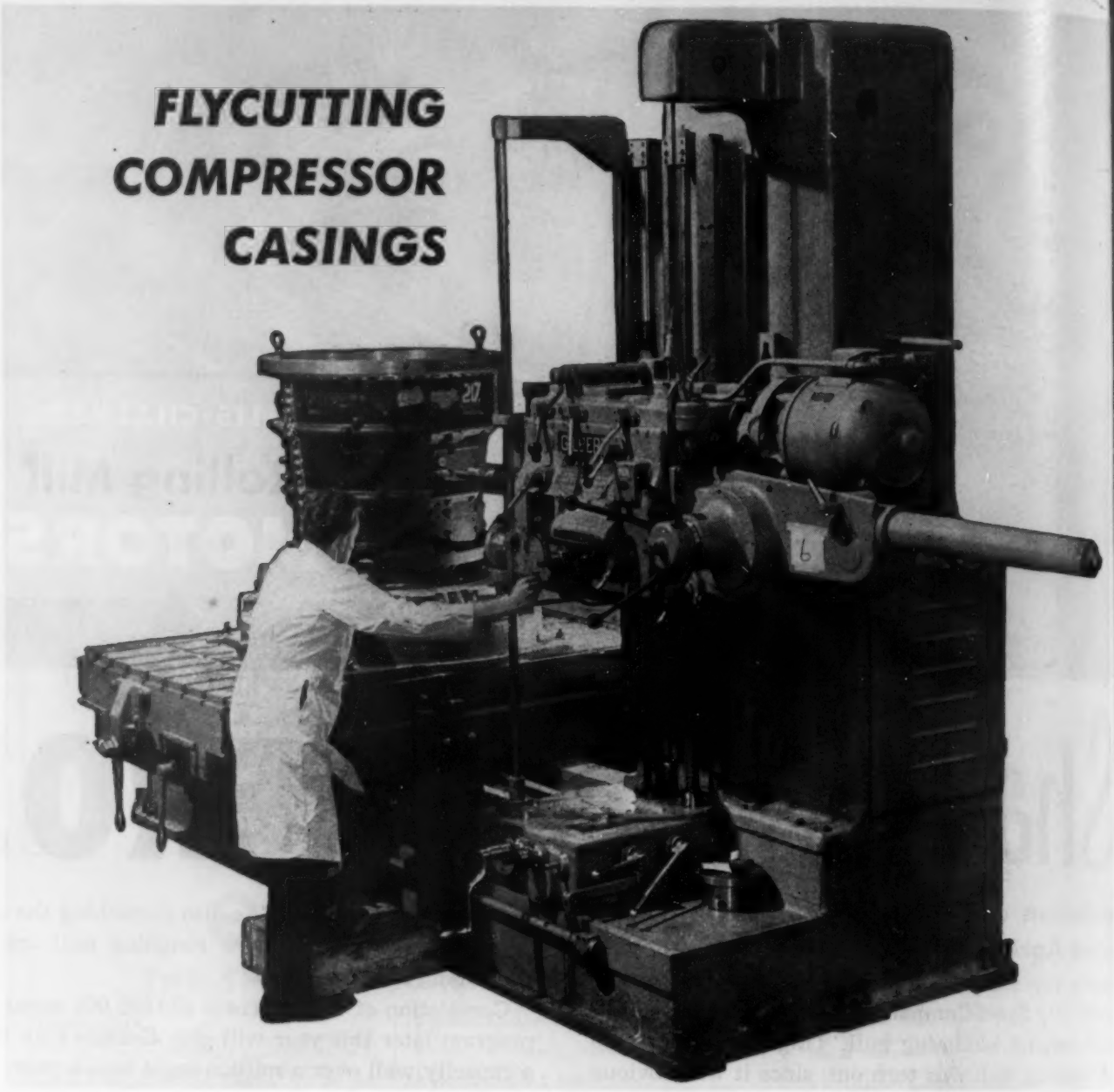


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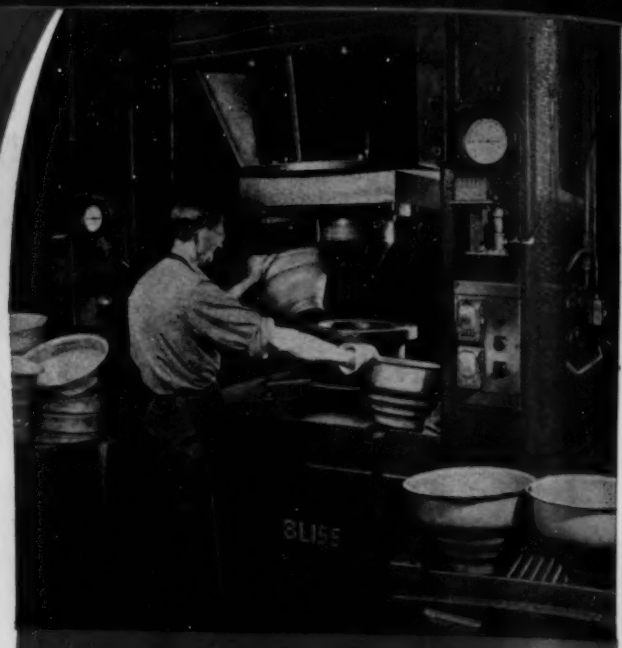


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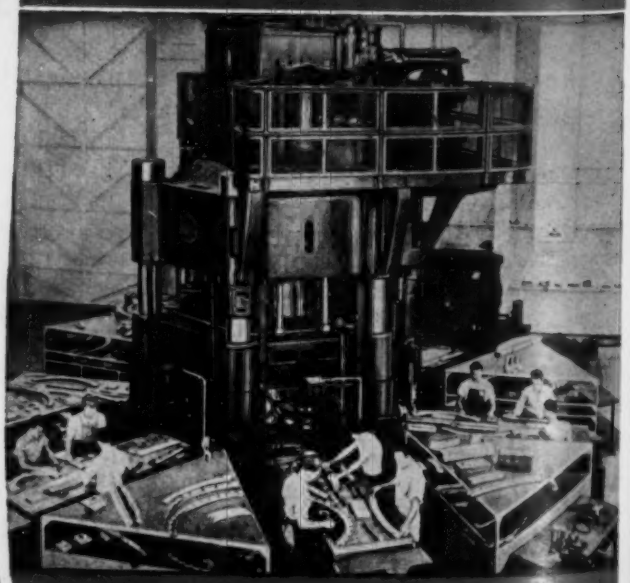

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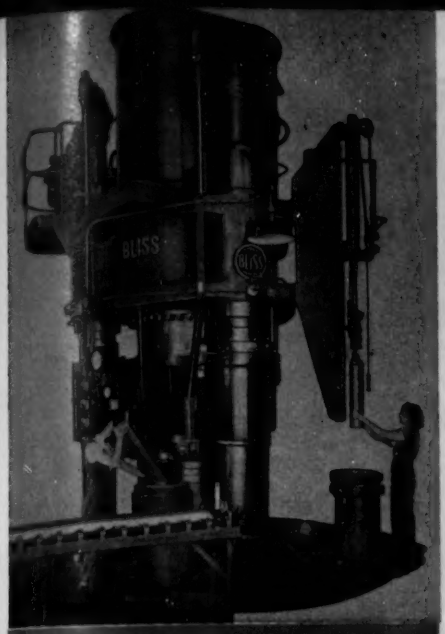

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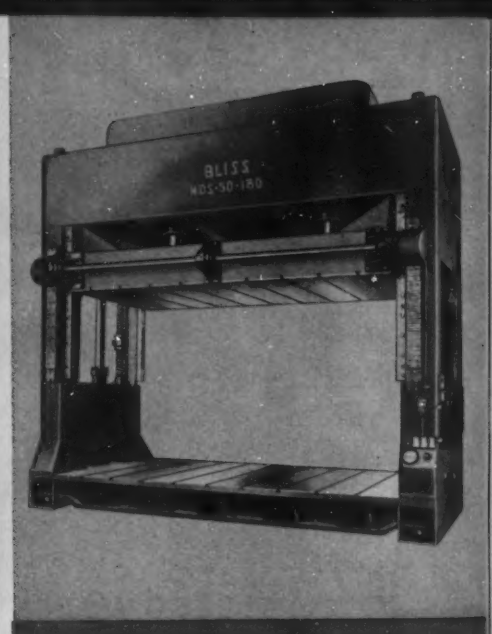
COINING

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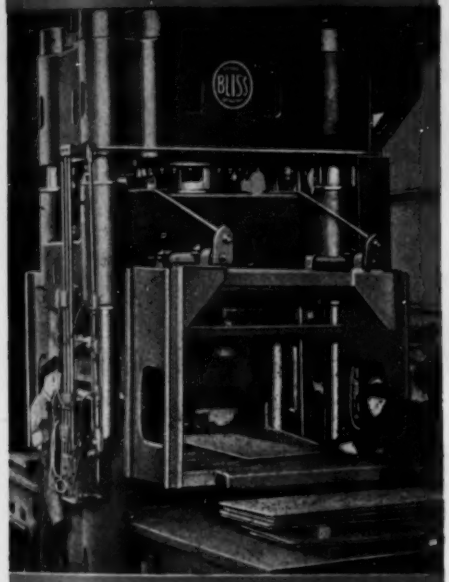


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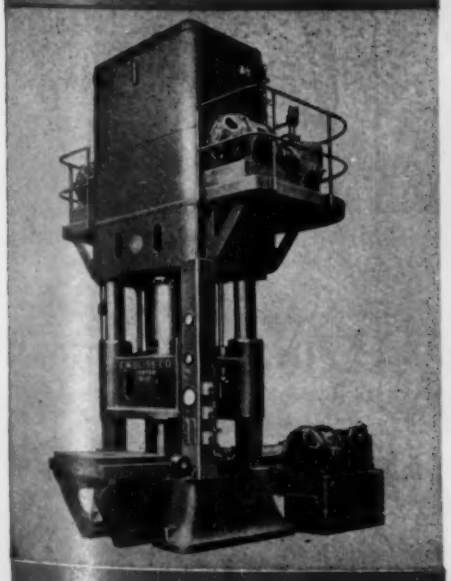

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### "HI-CARBS"

**Heat Treated Black Satin Finish**

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength in accordance with SAE Grade 5. Carried in stock.

### "LO-CARBS"

Made of AISI C-1018 steel—bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength in accordance with SAE Grade 2. Carried in stock.

### SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

### FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

### FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

### "SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

### ADJUSTING* SCREWS

Valve tappet adjusting screws — Hexagon head style—to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.

### CONNECTING ROD BOLTS*

Made of alloy steel—heat treated —threads rolled or cut—finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

### SPRING BOLTS*

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

### FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert—steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

***Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907***

**STANDARDS** carried by LEADING DISTRIBUTORS

* **SPECIALS** furnished to BLUE PRINT SPECIFICATIONS

**WRITE FOR INFORMATION**

**SEND FOR SAMPLES**

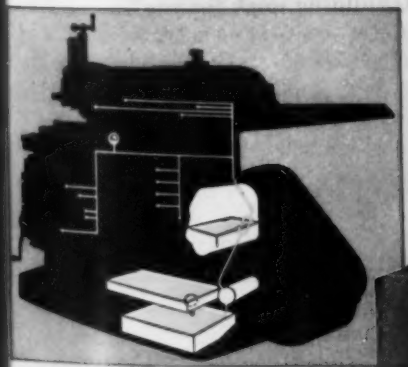
# 50 lbs. oil pressure

## IS NECESSARY WITH A CUT LIKE THIS...

Demonstration cut.
Actual size steel chip, 2" cut .030" feed.

**This tremendous cut** demonstrates the extra strength, rigidity, and power in Cincinnati Shapers. It also demonstrates the ability of the 50 p.s.i. lubrication system to develop and maintain oil films under the heaviest loads.

Write for Catalog N-5.

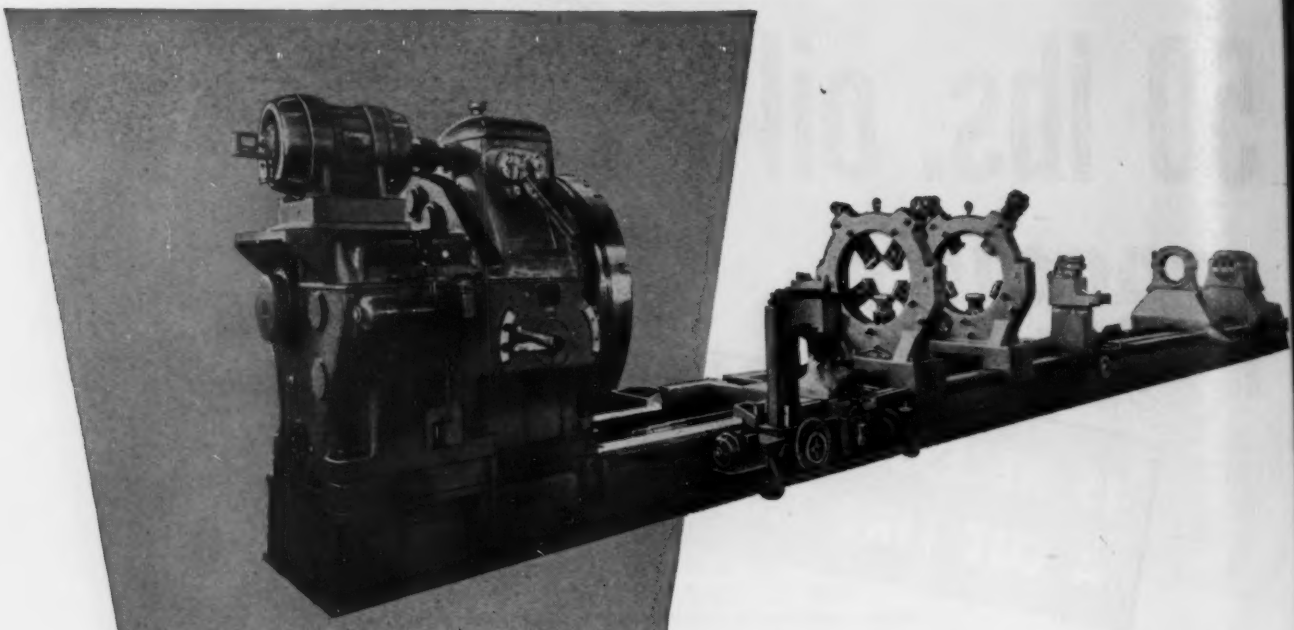


50 p.s.i. system includes 50 micro filter, settling basin and reservoir. Transmission runs submerged in oil.

CINCINNATI

## THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES



# Big Increase in swing and bore boosts lathe's roll capacity

***Before:*** 72″ swing, 12″ boring bar.
***After:*** 84″ swing, 30″ boring bar.

***Result:*** This Niles Boring Lathe now makes hollow rolls up to 60″ in diameter and 30′ in length for a manufacturer of paper mill machinery.

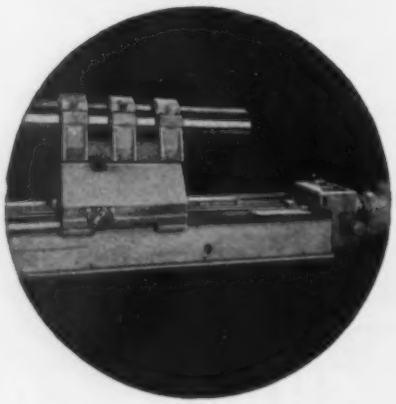
**How Simmons Engineered Rebuilding did it:**

New boring rests, built by Simmons, were installed to take 30″ boring bar; 6″ raising blocks inserted under headstock and each steady rest. Also added was an entirely new turning carriage engineered with self-contained traverse and feed.

In addition, Simmons completely rebuilt and modernized this lathe "from the ground up." Simmons technicians dismantled it down to main castings, thoroughly cleaned and tested all its bearings, replaced worn parts, installed hardened steel ways, renewed all working surfaces by milling and grinding, rewired all electrical circuits...and introduced many other up-to-the-minute features to make this lathe operate at an even higher capacity than when new.

**Can Engineered Rebuilding work for you?**

It's easy to find out. On your next maintenance check, note especially those complex, hard-to-replace machine tools. Are they operating as well as they might? If not, list the ones you can temporarily spare. Then, send us this list of machines. We'll promptly quote prices and deliveries, enabling you to judge for yourself the value of Engineered Rebuilding.



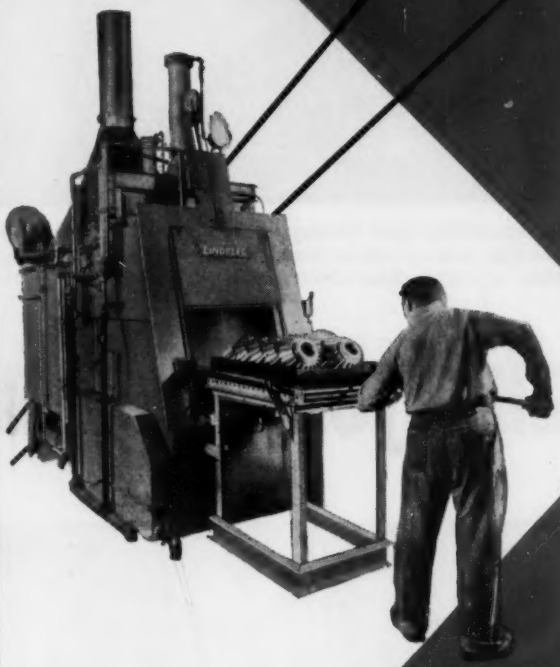
*Close-up view shows rebuilt boring carriage and drive mechanism.*

SIMMONS MACHINE TOOL CORPORATION
1721 North Broadway, Albany 1, New York
New York Office: 50 East 42nd Street
Phone in New York: MUrray Hill 2-5941 Phone in Philadelphia: VIctor 8-3133
Phone in Pittsburgh: PEnhurst 1-3700

**SIMMONS ENGINEERED Rebuilding**
GIVES MACHINE TOOLS A NEW LEASE ON LIFE

# 5 FURNACES IN ONE

## the LINDBERG Carbonitriding Furnace



Yes, it's many furnaces in one! It's designed not only for carbonitriding . . but also for hardening, carburizing and carbon restoration. It's self contained . . it's easy to maintain!

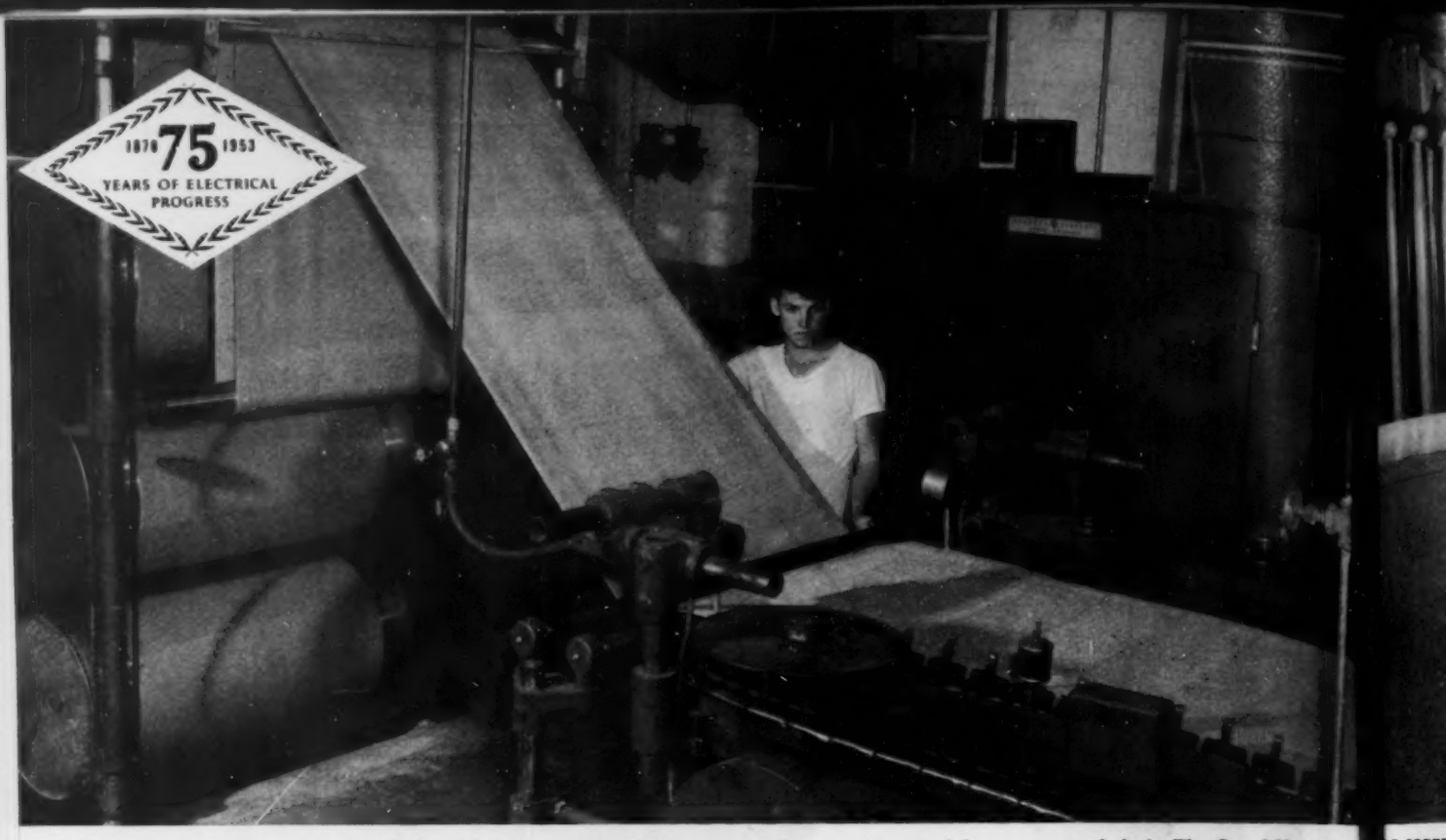
*10 reasons why Lindberg Carbonitriding Furnaces are better:*

1. Heating is by new type, gas-fired, vertical radiant tubes. They weigh only 29 pounds each . . can be changed in two minutes. Just lift out the old one, and lower the new one in its place.
2. Vertical radiant tubes last longer . . often two or three times as long.
3. Quench tank is built-in . . no costly excavation or piping necessary. Distortion is minimized because quenching takes place within furnace structure, and heated work is never exposed to outside air.
4. Quench tank has fin type oil cooler . . maintains oil at proper temperature for quenching.
5. Specially designed purge chamber purges work loads before they enter heating chamber.
6. Special check-light system tells you where charge is at any given time.
7. Control of heating and quenching cycle is automatic. Uniform case depth is assured because each charge remains at heat same length of time.
8. Depending on your production requirements, Lindberg Carbonitriding Furnaces are made for automatic, semi-automatic, or manual charging.
9. You're not experimenting with Lindberg Carbonitriding Furnaces. They've been tested . . under three years of rough operating conditions.
10. The famous Lindberg "Hyen" generators which supply atmosphere for Lindberg Carbonitriding Furnaces are instantly adjustable for many different types of atmospheres.

*For full details, ask for bulletin #241.*

**LINDBERG FURNACES**

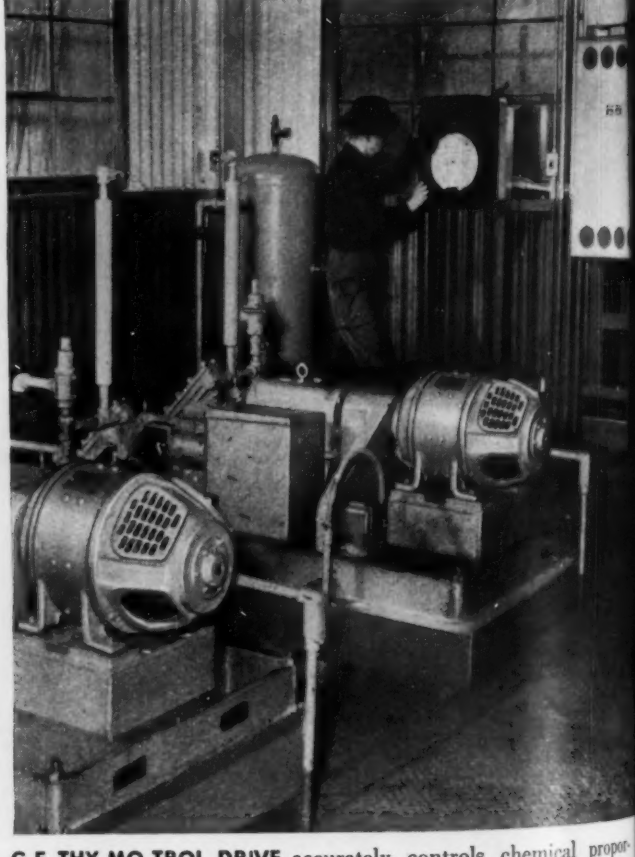
Lindberg Engineering Company • 2450 West Hubbard Street • Chicago 21, Illinois



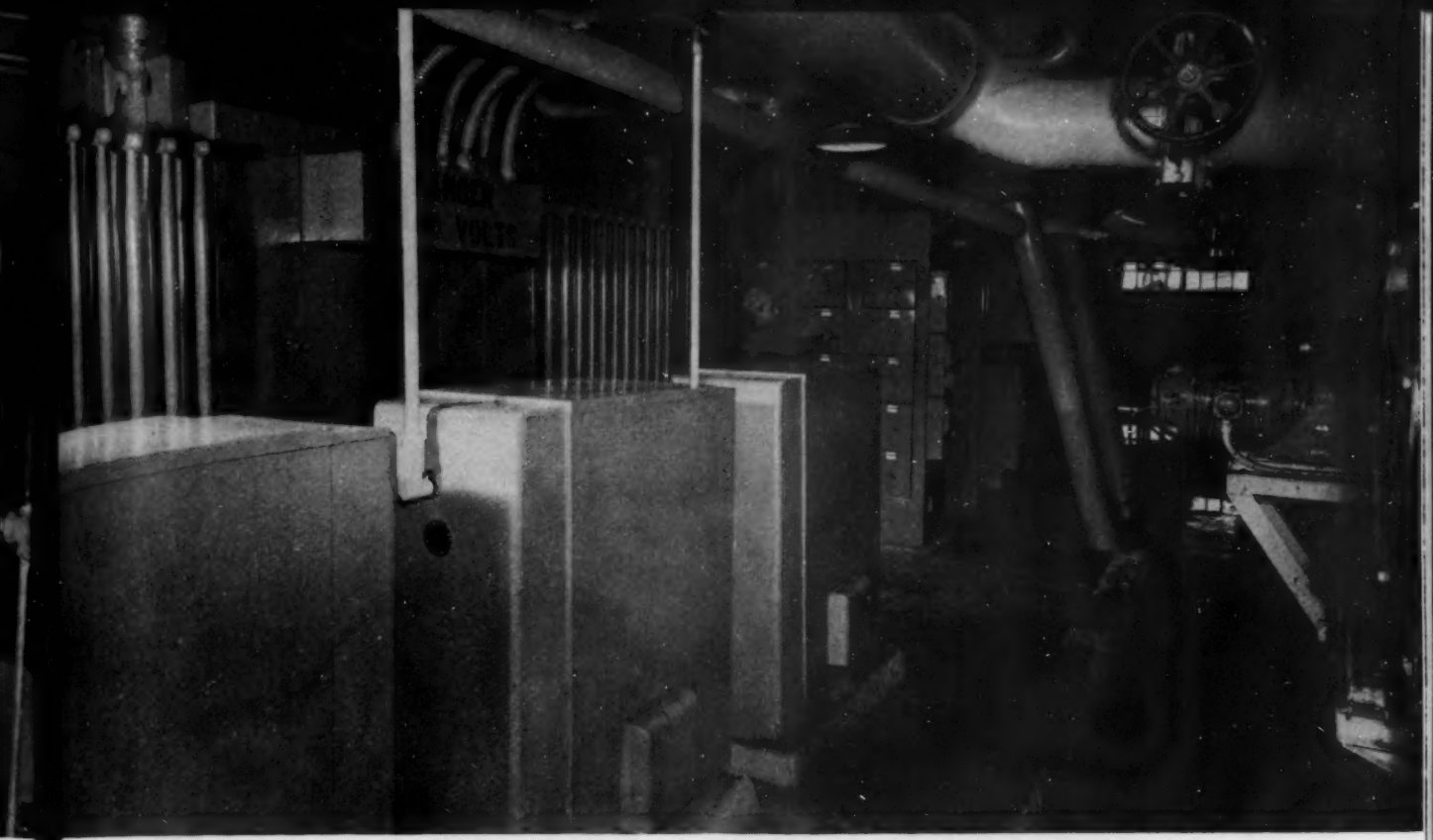

**CONTROL SENSITIVITY** of the G-E Speed Variator at the Jefferson Mill Inc., Jefferson, Ga., helps cut costs by enabling the operator to speed up the splicing of the cloth rolls . . . enables him to easily control processing speed for any type of cloth. The Speed Variator is a packaged unit . . . easily installed in any convenient location . . . provides your machine with stepless speed control up to a 40 to 1 ratio.

# Cut Costs by modernizing your machines wit

**G-E ACA MOTORS** now control coal stokers at the Socony-Vacuum Oil Co., Inc., Olean, N. Y. Working directly from AC current the ACA motor offers low cost, low range stepless speed adjustment.



**G-E THY-MO-TROL DRIVE** accurately controls chemical proportioning pumps at Fibreboard Products, Inc. East Antioch, Calif. This electronic drive offers precise control in speed ranges up to 100 to 1.



**-E SPEED VARIATORS** at the Ohio Boxboard Co., Rittman, Ohio, entralize control of various stock preparation processes . . . guard tock thickener speeds. Here you see three of the Speed Variator units—foreground . . . Available in ratings from 1 to 200 hp the versatile G-E Speed Variator can be adapted for even closer speed regulation by the addition of an amplidyne or electronic regulator.

# with a G-E Adjustable-Speed Drive!

**Here are four manufacturers** who have effectively improved one or more of the manufacturing operations in their plants by modernizing their equipment with G-E Adjustable-Speed Drives.

In the same way the proper application of adjustable speed can minimize waste and increase production for you. In addition, adjustable speed by making your present equipment more flexible, will enable you to manufacture a greater variety of goods.

**G-E Adjustable-Speed Drives** give you economical speed regulation as close as 1% if necessary . . . assure you of correct stepless speed adjustment. Standard drives are available in ratings from 1/40 to 200 hp with speed ranges from 3 to 1 up to 100 to 1.

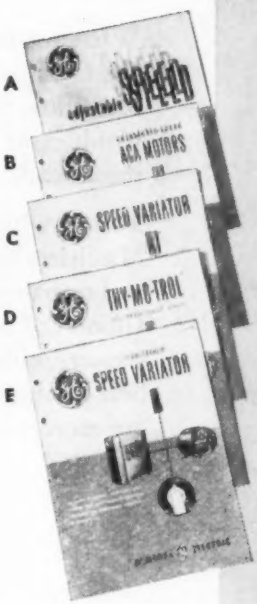
**For full information** consult your nearest General Electric Apparatus Sales Office. Your G-E Sales representative will be glad to recommend the most economical drive best suited to your operation. For printed information on the complete line of Adjustable-Speed Drives, use the coupon.

*You can put your confidence in—*

**GENERAL ELECTRIC**

## LET G.E. HELP YOU PICK THE RIGHT DRIVE

**Because only General Electric makes all major types of electric adjustable-speed drives, it is best qualified to help you select the right drive. Send for these informative bulletins.**




☐ **A.** This 26-page manual describes all four types of drives and where to apply them. Bulletin GEA-5334.

☐ **B.** Lower cost, simplest a-c drive. Bulletin GEA-4883.

☐ **C.** More flexibility, moderate cost. Bulletin GEA-5335.

☐ **D.** Top performance, 1/40—30 hp. Bulletin GEA-5337.

☐ **E.** Top performance, 1–200 hp. Bulletin GEA-5336.

**General Electric Company**
**Section A646-24**
**Schenectady 5, N. Y.**

Please send me the bulletins checked
☐ for reference only
☐ for planning an immediate project

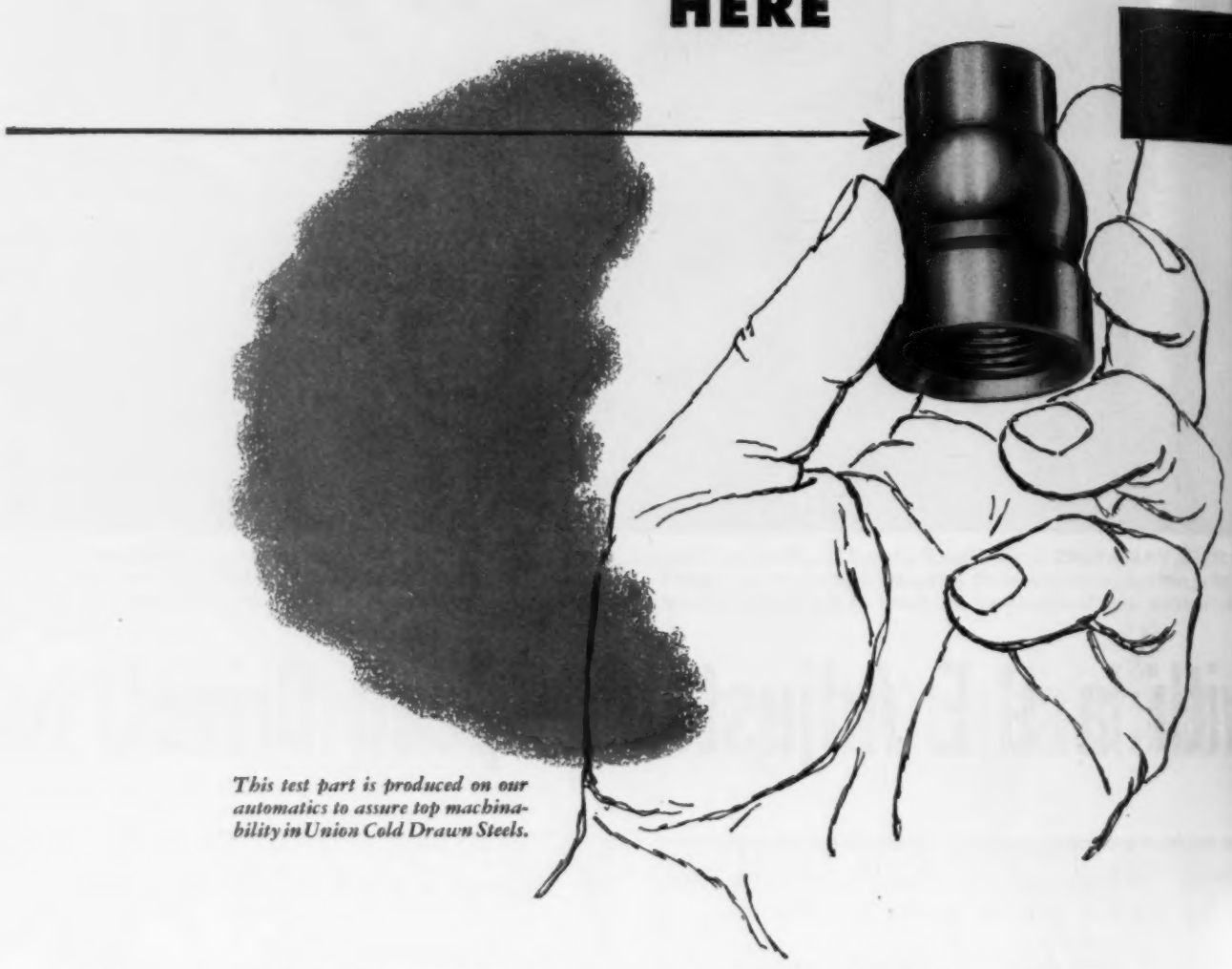
NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

# PRE-TESTED MACHINABILITY HERE



*This test part is produced on our automatics to assure top machinability in Union Cold Drawn Steels.*

What we learn about Union Cold Drawn Steels on *our* automatic screw machines at Massillon, Ohio, helps you make a better product at a better profit when you cut those steels on *your* automatics.

That's why Union Drawn's "Pre-Tested Machinability" idea keeps set-up men and operators happy when they're running Union Cold Drawn Stock... they get set-up sooner, with fewer headaches, using the best combinations of feed and speed. There are more parts in the shipping pan, fewer parts in the reject box. Profits stay up, costs stay down.

And it's all because we, too, have automatics! They run all day long, doing the six most common operations on the test part above. A part that has no practical use except to us at Union Drawn . . . and to you who use Union Cold Drawn Stock.

Our Union Drawn Field Metallurgists would welcome the chance to talk with your set-up man, swap hints on tool angles, heavier feeds, faster speeds. When shall we call?

**REPUBLIC STEEL CORPORATION**
*Union Drawn Steel Division • Massillon, Ohio*
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

REPUBLIC STEEL

**6 HELPFUL MANUALS**
filled with how-to-do-it information and data to help you use Union Cold Drawn Steels. Write for "Union Drawn Pocket Library."

*Republic* UNION® COLD DRAWN STEELS

**Free-Machining Bessemer, Alloy and Enduro Stainless Steels**
•
**Union Cold Drawn Special Sections**
•
**Union Cold Drawn and Ground Rounds; Turned and Polished Rounds; and Turned, Ground and Polished Rounds (Union Precision Shafting.)**

# For safety's sake, use smooth Youngstown Buckeye Conduit!

Youngstown manufactures full weight rigid steel electrical conduit from start to finish. There are many substitutes for rigid steel conduit, none possess all the overall safety features essential to permanent protection. On your next job, be 100% SAFE—be sure you get Youngstown Buckeye conduit.

HERE'S A CONTRACTOR WHO DOESN'T TAKE CHANCES: "I'm never safe with conduit that dents, cracks or breaks easily and damages my wiring. That's why I always use Youngstown Buckeye rigid steel conduit. Its smooth interior finish protects wires when pulled and its tough exterior of high quality rigid steel withstands hard treatment."

APARTMENT OWNER SAYS THIS: "As a landlord, I've got to look into every angle for the safety and protection of my tenants. That's why I insist on Youngstown Buckeye rigid steel conduit to protect wiring. Buckeye is an investment that discourages amateurs and kids from fooling with wires. In my 25 years as a landlord, Buckeye has proved its value in resisting corrosion, dust and moisture."

Shipments of Buckeye rigid steel conduit are now being made from our conduit mills at Indiana Harbor and Youngstown.

**THE YOUNGSTOWN SHEET AND TUBE COMPANY**

*Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices — Youngstown 1, Ohio

Export Office-500 Fifth Avenue, New York

COLD FINISHED CARBON AND ALLOY BARS - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - WIRE - PIPE AND TUBULAR PRODUCTS - CONDUIT - RODS - SHEETS - PLATES - BARS - RAILROAD TRACK SPIKES.

# Gives white hot steel the "kid glove" treatment

GIGANTIC MACHINES with thousands of moving parts are used to shape white hot ingots into plates and sheets. All of these hard-working machine parts are subject to intense heat . . . normal in steel manufacturing. Because of the intense heat, lubrication is a serious problem.

U. S. Steel has tried various types of greases in order to eliminate the problem of oil burn-out. Now they're using a product of Shell Research, Shell Alvania Grease. Result: better lubricating action *at once*. Months after the original installations, rollers were removed and an excellent film of grease was still present.

At the other extreme, zero weather caused grease in an automatic lubricating system to congeal and become unpumpable. Shell Alvania was tried and clogging promptly stopped. This multi-purpose grease is now used extensively in low-temperature operations at U. S. Steel's Ohio Plant.

**SHELL ALVANIA GREASE**

- **resists oxidation**
- **will not squeeze out**
- **extends periods between overhauls**
- **provides exceptional lubrication in high or low operating temperatures.**

Shell Alvania Grease can cut down costly maintenance and save time and money in *your* plant. Write for technical information.

**SHELL OIL COMPANY**

50 WEST 50TH STREET
NEW YORK 20, NEW YORK

100 BUSH STREET
SAN FRANCISCO 6, CALIFORNIA

SHELL

Two of the Steelweld Presses in action. These are Model K5-10 machines rated for 12'-0" x 3/8" steel plate. Note how Cleveland Tramrail cranes serve these presses.

# Battery of STEELWELD PRESSES and SHEARS Aids Caterpillar Production

Shearing long ½-inch thick strips into small rectangles on a Series 8D-10 Steelweld. The long extension squaring arm at front facilitates this work.

THOUSANDS of tons of steel of different thicknesses are sheared and formed on Steelweld Shears and Presses into various shapes required for the large volume of tractor equipment produced at the new Joliet, Illinois, plant of Caterpillar Tractor Co. These items include scrapers, rippers, bulldozer blades and wagons.

The heavy construction of Steelweld machines and many high quality features with which they are provided make possible continuous trouble-free performance. Their design includes a number of innovations which ease operation, speed production and enable accuracy to close tolerances.

The fact that Caterpillar has bought Steelweld Shears and Presses repeatedly and now has a large battery of them is mute testimony to the satisfaction they are giving.

**GET THESE BOOKS!**

Catalogs No. 1010 (Presses) and No. 1011 (Shears) give construction and engineering details. Profusely illustrated.

**THE CLEVELAND CRANE & ENGINEERING CO.**

*4850 East 281st St.* *Wickliffe, Ohio.*

**STEELWELD**

***PRESSES and SHEARS***

# Here is perfection!

ROEBLING high carbon wire is unsurpassed for industry today. Roebling wire is absolutely true to specifications ...absolutely uniform in gauge and finish. Manufacturers who try Roebling wire once, become Roebling customers from then on.

You *pay* for the best when you buy high carbon wire. Make sure that you *get* it! Always specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

The Jonker, world's largest emerald-cut diamond.

**ROEBLING** CF&I

*A subsidiary of The Colorado Fuel and Iron Corporation*

**BRANCHES:** ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

# Protect your machinery's LIFE-LINE!

ELIMINATE VIBRATION

GUARD AGAINST LOAD SHOCK!

## Specify LOVEJOY FLEXIBLE COUPLINGS

When you install Lovejoy Couplings, you guarantee your machinery the benefits of years of coupling design and engineering experience. You know that smooth, steady power transmission will keep your runout tables, conveyors, hoists, pumps and other production equipment operating at peak efficiency.

Note the compact, accurately machined bodies and jaws—the special cushioning materials—and you'll see why Lovejoy spells the end of your "down-time" worries... why misalignment, backlash, and surge are reduced to a bare minimum.

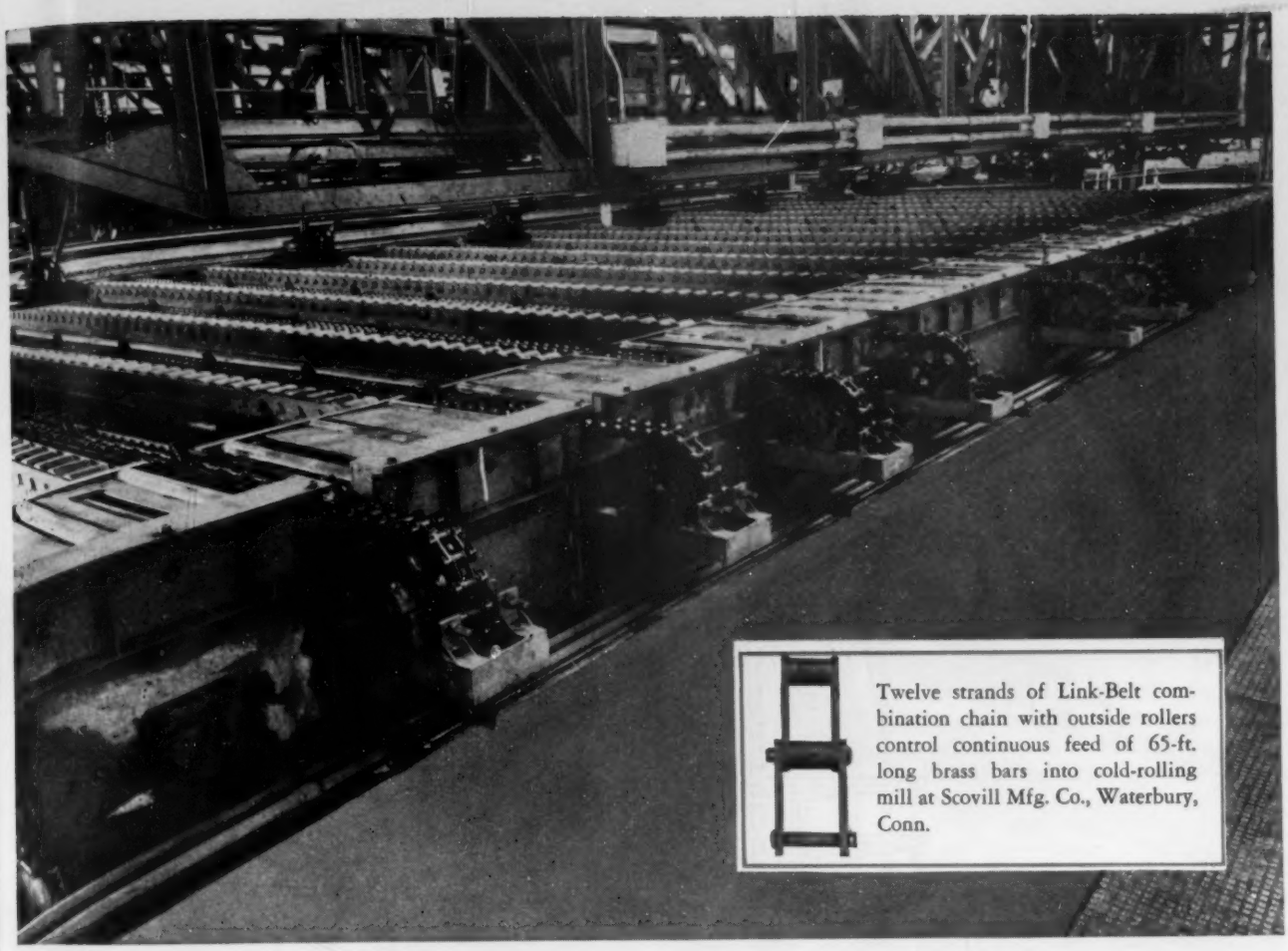
Lovejoy Couplings reduce maintenance time. Cushions are changed without shutdown. Lovejoy Couplings never require lubrication.

Write to us now for full technical data and engineering advice. Our illustrated catalog, with handy selector charts, is yours without obligation. Just forward your request.

**LOVEJOY FLEXIBLE COUPLING COMPANY**

5066 WEST LAKE STREET CHICAGO 44, ILLINOIS

*Manufacturers of Couplings, Universal Joints and Variable Speed Transmissions*





Twelve strands of Link-Belt combination chain with outside rollers control continuous feed of 65-ft. long brass bars into cold-rolling mill at Scovill Mfg. Co., Waterbury, Conn.

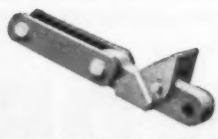
# What is the right chain for your drive or conveying job?

## Typical chains from the complete LINK-BELT line

Class H drag chain—for drag conveyors, handling shavings or other refuse in runways or troughs.

Class C combination chain—popular, durable, low cost design for elevators, conveyors.

Class SS bushed roller chain with offset sidebars—for heavy drive service at moderate speeds.



Transfer chain with tilting dogs—for plate and slab travel, loads up to 300,000 pounds.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13,209-B

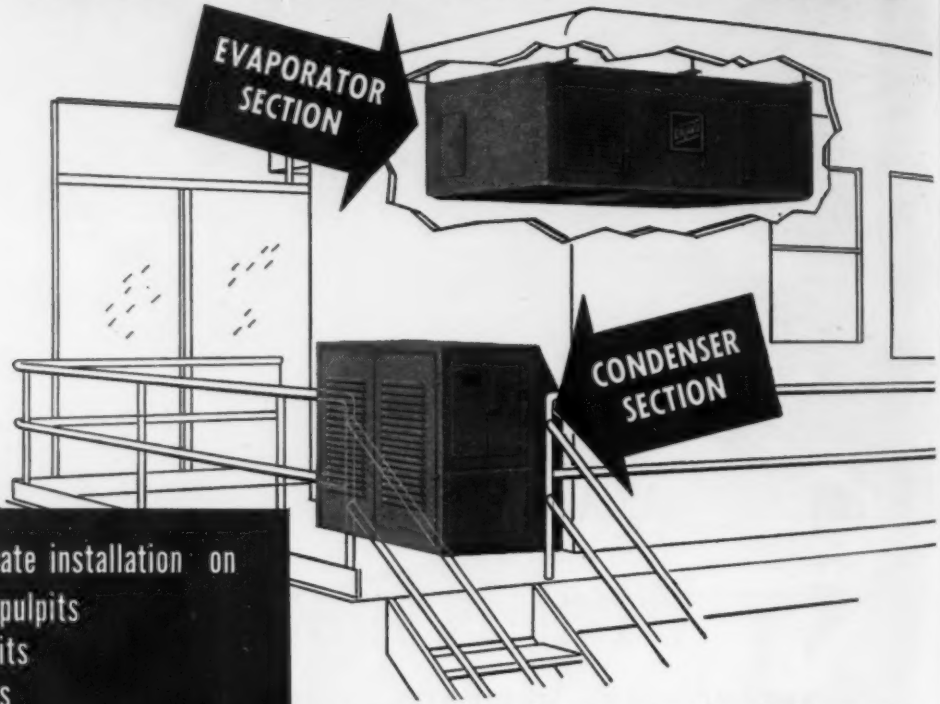
## You'll find the answer in LINK-BELT's complete chain line... a size and type for every need

WHETHER it's a high-hp, heavy-impact drive or relatively slow-speed conveying service—you can get the *one* chain that best meets your needs from Link-Belt's complete chain line. Our engineers will be glad to work with you—help you select the right chain for your requirements. And you can be sure that any Link-Belt chain you buy is quality-built for longer life.

LINK-BELT

CHAINS AND SPROCKETS

# Announcing...
## The NEW DRAVO
# PULPIT AIR CONDITIONER




. . . available for immediate installation on
- blooming mill pulpits
- strip mill pulpits
- rod mill pulpits

and other steel mill control locations where heat, dirt and fumes create working hazards

The new Dravo Pulpit Air Conditioner—latest addition to Dravo's complete line of industrial air conditioning units—is especially built for pulpit installations. The evaporator section is floor- or ceiling-mounted inside the pulpit along with a suitable cabinet which contains all controls. The condenser section is located adjacent to the pulpit wherever convenient. The two sections are joined by refrigerant piping. Either water or air can be used as the refrigerant.

### *Thermostatic Control for Year-around Air Conditioning*

The Dravo Pulpit Air Conditioner is thermostatically controlled to maintain 80° to 85° F temperature in the pulpit in summer when ambient temperature is 175° F; and 68° to 72° F in winter with an ambient temperature of 0°F.

The Pulpit Air Conditioner filters the air, removes dust, dirt, fumes and gases; heats the pulpit in winter, cools it in summer and provides year-around ventilation. It protects pulpit operators' health, makes them more comfortable and efficient and enables them to work longer periods of time.

### *Easy Installation, Long Service Life*

The Dravo Pulpit Air Conditioner can be easily installed by Dravo personnel without interruption of work operations. Each unit is factory-assembled, pre-tested and is ruggedly constructed for years of service. All parts are readily accessible for easy maintenance.

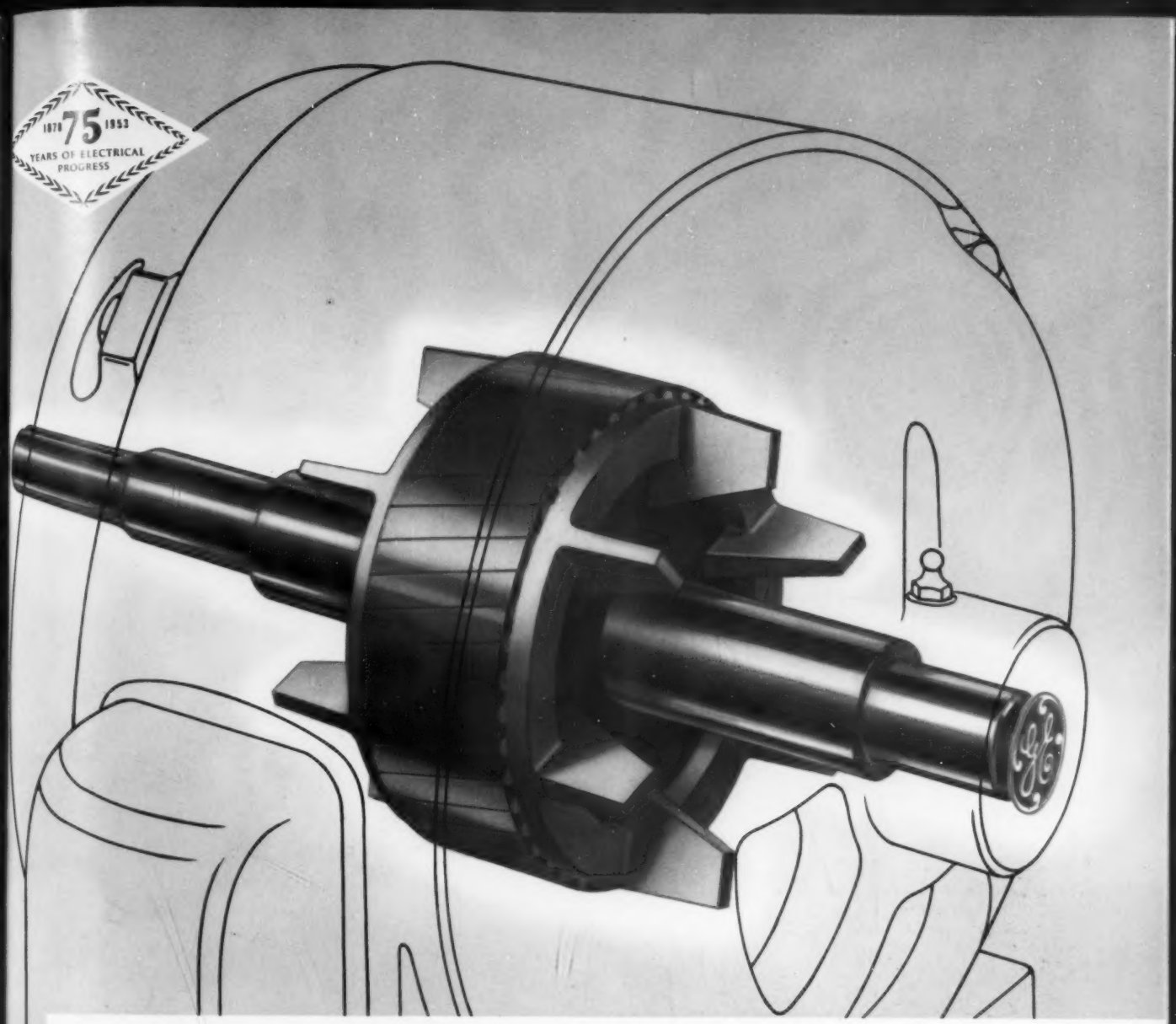
### *Write Today for Complete Information*

Get the full story on Dravo's Pulpit Air Conditioner. Write—or phone—the nearest Dravo Office and ask our representative to call.

DRAVO CORPORATION

*Air Conditioning Department*
**Fifth and Liberty Avenues, Pittsburgh 22, Penna.**

Atlanta • Boston • Chicago • Cincinnati • Cleveland • Detroit • Indianapolis • New York • Philadelphia • Pittsburgh • St. Louis • Washington




# Why rotors don't fail in G-E TRI-CLAD motors

REG. U.S. PAT. OFF.

**G-E pioneering and research** developed and produced this one piece cast-aluminum rotor winding, which has virtually eliminated rotor failures in Tri-Clad motors.

**Rotor is indestructible in service** because the bars, end rings, and fans are a "one-piece" casting. No brazed joints, no fabricated fans to come apart.

**Rotor inertia is reduced** by the lightness of the aluminum, thus raising efficiency and allowing easier starting, stopping and reversing.

**Rotor efficiency is higher,** operating losses reduced, as the result of a special chemical treatment.

**The motor runs cooler** because the integrally cast fans dissipate heat faster.

**Operation is smooth and quiet** due to the dynamic balancing of the rotor which also reduces bearing wear and material fatigue.

**Long rotor life is one more reason** why G-E Tri-Clad motors last longer — give you more reliable service and greater operating economy.

**Order Tri-Clad motors today** from your nearby G-E representative. You'll find popular models in stock. General Electric Co., Schenectady 5, N. Y.

752-20

*You can put your confidence in—*

GENERAL ELECTRIC

# NEW H-VW-M HEAVY-DUTY Rectifiers

## combine all these features most desired for metal finishing operations

**EYE-LEVEL PILOT LIGHT** — quick, positive switch indication.

**HEAVY-DUTY TERMINALS** — deliver 6-phase center-tap output with theoretical ripple of only 4.2%.

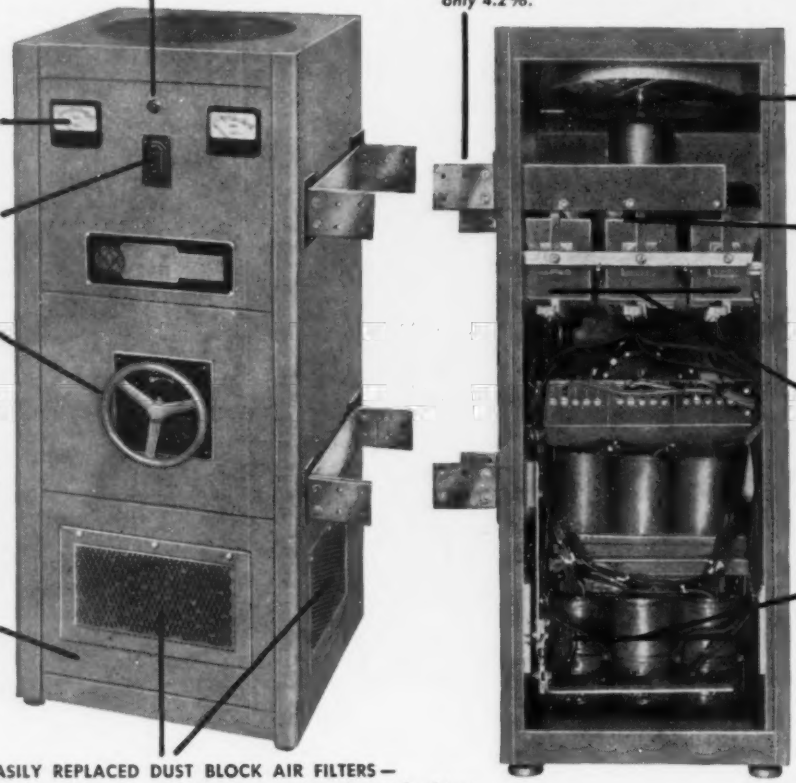
**LARGE, SQUARE-TYPE METERS** — easy to read, accurate to 2%.

**CONVENIENT START-STOP BUTTON** — simplified switching for operating *entire* unit.

**SINGLE-WHEEL TYPE CONTROL**—21 points of fool-proof on-load control, available 10 KW to 20 KW.

**AUTOMATIC RESETTING STARTER — DUAL INPUT** — full overload protection *plus* low-voltage release. Dual Input: 220/440 v, 3 phase, 60 cycle.

**STURDY STEEL CABINET** —with angle-iron frames, grey hammertone finish, may be mounted on rubber shocks (optional).



**FAN-DRIVEN UP-DRAFT** — oversize fan with sealed motor and lubrication constantly cools transformers and stacks.

**PRECISION-CALIBRATED THERMOSTAT** — positive guard against excessive stack temperature. Instant cut-off.

**CUSTOM-BUILT SELENIUM STACKS** — assembled and electrically matched by H-VW-M. Plate areas well above N.E.M.A. specs. Heavy anti-corrosion, anti-fungus coating.

**HEAVY-DUTY TRANSFORMERS** — Class B insulation type, rated for *continuous* operation at temperature rise up to 25° over ambient, calculated for convection cooling.

**EASILY REPLACED DUST BLOCK AIR FILTERS** — remove all solids and most fumes. Easy to reach from front of cabinet.

Dual output is available for slight additional cost. Models available in either self-contained or remote-controlled units.

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Imagine... a theoretical ripple of *only 4.2%*. There's real assurance of more uniform deposits! And single-wheel control... only one control for 21 points of on-load switching! And those *oversize* transformers for plenty of reserve capacity—as well as the *increased plate area*... all these, plus the individual features pointed out above, add up to the most complete line of rectifiers ever designed for metal finishing. *Yet they cost less per unit than any other rectifiers made!*

*For complete information on H-VW-M Rectifiers ask for Bulletin ER-105.*

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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